AVIATION WEEK
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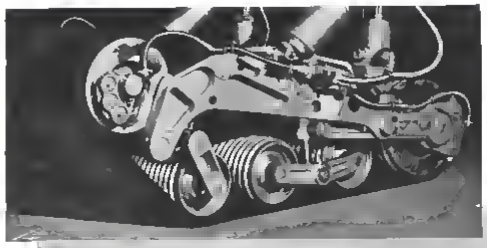

The new track type landing gear that provides a "built-in-runway" for The Fairchild C-82 Packet shown below

Electrol builds the Air Springs for the "Built-in-Runway" of the C-82 Packet

THANKS to its revalutianary, track-type landing gear, the Fairchild C-82 Packet can take-aff and land where it chaases—an sad, sand, ar ather unimproved surfaces.

Credit far this outstanding advancement — that enables aircraft ta carry their awn landing strips — is shared in part by Electral engineers. Applying their wide and diversified hydraulic knawledge, they designed and built the Air Springs, which provide the tremendous force necessary ta maintain tensian in the built-in-runway's "belt"—yet, keep it flexible enaugh sa it will deflect when field abstacles are encountered.

This is but one of many examples where Electral was called upan to help salve a prablem invalving the use af hydraulics.

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AVIATION WEEK

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NEWS SIDELIGHTS

Smoothing Airways

Members of the newly created Air Navigation Development Board met quietly in New York last week with key members of the navigation committee of the National Military Establishment research and development board to iron out policy matters and define more specifically areas where the ANDB charter is not sufficiently specific.

Key to swift and sure development of the automatic target system of all-weather electronic airways will be how effectively ANDB gets along with the two other interested government groups involved—the RDB navigation committee and the Air Coordinating Committee's navigation panel.

Economy Axe

The economy axe poised over the Air Transport Association this month isn't of the paper-mache variety as turned out to be the case last year. A four man subcommittee of ATA's finance committee has given the association's departments a thorough going over and last week made its report.

Across-the board slashes up to 30 percent may be approved by ATA's board of directors, which holds its annual meeting Dec. 16. The association's experimental DC-3 "Beta," long a target of economizers, may not be retained.

Some airline executives who favor moderate economies are fearful that wholesale budget slashes will do permanent harm to the industry when it is showing signs of getting back on its feet.

Airline Investigation

Counsel William Rogers and assistant counsel Francis Flannagan of the Senate investigating subcommittee are ready to open public hearings on airline subsidization as soon as—and if—subcommittee chairman, Sen. Homer Ferguson (R., Mich.), or his Democratic successor to the chairmanship in January, push the button.

Ferguson has not given a definite "no" to the hearings, but it appears improbable that he will launch them during his brief remaining tenure in the chairmanship which will end Jan. 3. Sen. John McClellan (D., Ark.) who turned Dixiecrat in the election, is in line to take over the chairmanship of the full Senate Committee on Expenditures in Executive Departments, of which the investigating subcommittee is a subdivision.

McClellan is known in aviation circles for his backing of the chosen instrument policy as a member of the old Senate Commerce Committee. He is viewed as a Pan American Airways partisan by some airline spokesmen. Senate Democrats, however, plan to maneuver McClellan's demotion. In this case, the chairmanship—and the decision on holding airline subsidy hearings after January—would fall to Sen. Clyde Hoey (D., N. C.), a Southerner who stuck to the Democratic fold in the election.

Lobbying Prospects

A tightening up of lobbying regulations appears likely in the new Democratic controlled Congress. Approximately two dozen aviation representatives—mostly from the airline field—have registered under the lobby provisions of the 1946 Congressional Reorganization Act.

During the election campaign, Democratic chairman Sen. Howard McGrath (D., R. I.), proposed legislation requiring weekly reports by registered lobbyists, detailing expenditures and activities, instead of quarterly reports as now. This, McGrath suggested, would enable legislators to turn the spotlight on lobby activities while legislation was under consideration—instead of after.

Consideration of McGrath's proposal may be preceded in the new Congress by an investigation of lobby activities over the past two years of the 80th Republican-controlled Congress. Justice Department is now limited to prosecuting for failure to register under the 1946 act.

Five-Hour Air Show

An elaborate air show will vie for spectator attention with a five hour parade from the Capitol, down Pennsylvania Avenue to the White House at the Presidential inauguration ceremony. Air Force, Navy, Marine, and Coast Guard planes will participate in the air demonstration.

It will feature the services' newest type planes, acrobatic flying, and tactical formations. If the air procession falls short of the estimated five hours of the inaugural parade there will be a repeat performance. Showman Carter Barron, eastern manager of Loew's theaters and Washington representative of MGM, is handling air show arrangements for the inaugural committee headed by Melvin Hildreth.

Air Force Fight

Defense Secretary James Forrestal's latest move to gag the Air Force—an order requiring that all proposed legislation of the three services funnel through his office before submission to Congress—won't stop the Air Force legislative program.

Objective of the Forrestal regulation was to kill off legislation authorizing the 70-Group USAF before it could reach Capitol Hill. But it's already set to come up despite the gag.

Rep. Carl Vinson (D., Ga.), scheduled to become chairman of the House Armed Services Committee, is ready to steer it through his committee and the House—both of which overwhelmingly approved it in the last Congress. In the last Congress Senate armed services committeemen listened receptively to Forrestal arguments and postponed action on the measure.

Next year, Sen. Edwin Johnson (D., Colo.), scheduled to become chairman of the Senate Interstate and Foreign Commerce Committee, and Sen. Owen Brewster (R., Me.), outgoing chairman of Interstate's aviation subcommittee, will pressure Senate armed services for favorable action. Their case will be the 70 Group program is not only vital for an adequate defense force, but also necessary to keep an adequate aircraft manufacturing industry in being—a subject of concern to the Interstate Commerce Committee.

Produceability Problem

Aircraft engine and propeller manufacturers are not as prone to "go along" with the Air Force's new "produceability" factor in evaluation of new procurement. Holding strongly to the view that engines and propellers are "dynamic" devices, as compared with "static" nature of airframes, these manufacturers are convinced that engines and propellers undergo far too extensive redesign during the development stage to permit any consideration of produceability in the process.

They believe that in through the development stage, performance alone should be the criterion for evaluation and after the engine or propeller has reached the flight stage that then consideration can be given to produceability.

AVIATION CALENDAR

Dec 14-16—Aircraft Industries Assn Air Force-Navy-Industry meeting on accessory drive requirements, Power Plant Lab, Wright-Paterson Air Force Base Dayton Ohio.

Dec 17—Annual Wright Brothers Lecture Institute of the Aeronautical Sciences, U S Chamber of Commerce Bldg. Washington D C

Dec 18-20—Statewide Operators Meeting Minnesota Department of Aeronautics.

Dec 21-22—University Farm Short Course for Dusters and Sprayers Minnesota Department of Aeronautics

Jan 3, 1949—Florida Flying Alligator Club 14th annual reunion Melbourne, Fla

Jan. 13-14—Materials Handling Show, sponsored by the American Society of Mechanical Engineers Convention Hall Phila.

Jan 10-14—Society of Automotive Engineers Annual Meeting and Engineering Display, Hotel Book-Cadillac Detroit, Mich

Jan 11—ICAO Communications Division Montreal

Jan 12-14—Commercial Spray Operators conference University of Illinois, Urbana, Ill

Jan 13-14—Fourth NAS Council Meeting AIA offices Hollywood Calif

Jan 18-Feb 11—Third Air Transportation Institute, American University Washington, D C

Jan. 24—Honors Night dinner Institute of the Aeronautical Sciences Hotel Astor New York City

Jan 24-27—IAS seventeenth annual meeting Hotel Astor New York City

Jan 25-27—Society of Automotive Engineers metropolitan section fuels and lubricants meeting Engineering Societies Bldg New York City

Feb 8—ICAO Operations Division Montreal

Feb 22—ICAO Airworthiness Division Montreal

Mar 8—Society of Automotive Engineers metropolitan section, air transport meeting Engineering Societies Bldg New York City

Apr 3-6—American Association of Airport Executives Oklahoma City

Apr 11-12—Society of Automotive Engineers national aeronautic and air transport meeting Hotel New Yorker New York

Apr 11-16—Western Metal Congress and Exposition sponsored by American Society for Metals Shrine Civic Auditorium, Los Angeles Calif

July 3-4—First Annual Southern California International Air Race Long Beach

July 18—ICAO North Pacific regional air navigation meeting Seattle.

Aug 24—ICAO African-Indian ocean air navigation meeting Algiers

Aug 29—Federation Aeronautique Internationale Cleveland

PICTURE CREDITS

CAA 12 13 15, Glenn L. Martin 14, Boeing 18 USAF, 37, Capital Airlines 42, FAA 46

The Birdmen's Perch

By *Major Al Williams,* ALIAS, "TATTERED WING TIPS,"
Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh 30, Pa.

Will you help us find a guy?

This guy is sole owner of one of the greatest stories of the century. If he'll just step forward and tell his story, we'll make him a Senior Perch Pilot right off! No "bottom rung" qualifications or anything. It's like this:

When the F-86 was trying to break the speed record at the Air Races in Cleveland, the pilot maintained an average altitude of 285 feet during his passes, thus staying in range of the timing cameras.

At that speed and that altitude, he couldn't do any stick horsing to change course without bending the jet somewhat. So he'd start easing down into the slot while he was miles from the field.

Holding his position, he'd zip across the field (and timing devices), and bore right straight on, almost out of eyesight, before he started his gentle, 15-mile wide turn for the next pass.

Well, on one run the smoke-pumper shrieked past a happy character in a putt-putt, about 5 miles west of the field. "I don't think he even saw me," said the Air Force pilot.

"*I missed him by about 10 feet!*"

That's the story we want to hear! We want to know what the feller in the light-plane thought when that roar went off in his ears and his plane got the turbulence of the F-86.

If you know him—or *are* him—will you get in touch with us, please?

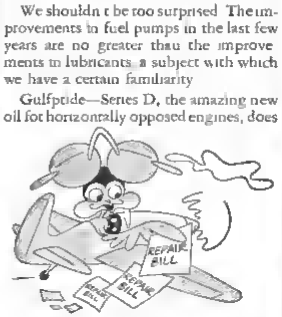
PUMPS AND CIRCUMSTANCES

The new developments in aviation come so swiftly that we have trouble keeping up with them.

A new fuel pump for jets pumps a barrel of fuel in 75 seconds at pressures as high as 750 lbs. P.S.I. That's 3 times the amount of fuel at 15 times the pressure that pumps had to deliver on engines in use during World War II!

We shouldn't be too surprised. The improvements in fuel pumps in the last few years are no greater than the improvements in lubricants, a subject with which we have a certain familiarity.

Gulfpride—Series D, the amazing new oil for horizontally opposed engines, does



things for your engine that were never dreamed of a short while ago. It frees stuck valves *and keeps them free much longer!*

It unsticks rings, too, so that they can help deliver power to the shaft instead of the crankcase. Loose carbon and sludge that form in engines are held in suspension by Gulfpride—Series D, and removed by draining.

Gulfpride—Series D, is the only oil in the world made *specifically* for lightplane engines which has had the Alchlor Process extract extra impurities from it.

Try it, and watch your repair and replacement bills dip!

LITTLE KNOWN FACTS

We've only room for one Little Known Fact About Well Known Planes, this month. We're sending a genuine hard-to-get Commission as Perch Pilot (bottom rung) to Dale Hawk, Carlyle, Kans., for:

"*Tire pressures as high as 200 pounds are used on some experimental jets!*"

4 more, Dale, and we'll promote you to Senior Perch Pilot, a rank so exalted that strong men swoon when they win it!

And how about the rest of you? Haven't *you* any pet aviation information?

Send it to the address at the top of the page and get the Commission the real Perch Pilots use!

NEWS DIGEST

CUT IN CAA SAFETY STAFF

Slashes of nearly 50 percent in Washington personnel of CAA's Office of Aviation Safety appear likely by the first of the year The decentralization will place further emphasis on regional offices As yet, there are no indications that regional payrolls will be cut

Rumors have been circulating for several weeks in CAA circles that Joe Marriott recently named director of aviation safety replacing Al Koch, had been brought to Washington as a "hatchet" man Marriott has been Sixth Region Administrator in Los Angeles No successor has been named to his old post, and some CAA people believe he will be in Washington only long enough to complete his recommendations to the new CAA Administrator Del Rentzel Marriott is well known as a proponent of decentralization

According to reports which appeared reliable late last week Rentzel has accepted Marriott's proposals that Washington staffs of the Aircraft & Components Service, Airman Service, Flight Operations Service and Aviation Medical Service be cut almost half Another report said Dr R W Stovall's force (Medical) will be cut from about 35 to 5 persons CAA observers expect the Office of Federal Airways will be reorganized next

Some personnel will be dismissed, others transferred and others down-graded CAA public information officers would not comment on the reorganization.

DOMESTIC

William A Blees, vice president sales of Consolidated Vultee Aircraft Corp, was appointed vice president of Avco Mfg Corp and general sales manager of Crosley division He had been with Convair since 1945

Screw threads standardization agreement was signed at Bureau of Standards in Washington by U S, Great Britain and Canada

Railway Express Agency last week was scheduled to inaugurate new Air Express service to Honolulu from Seattle, Portland and Tacoma via Northwest Airlines

FINANCIAL

Glenn L Martin Co reported sales totaling $15,151,046 in quarter ending Sept 30, bringing sales for first nine months to $41,839,374 In like period last year sales were $15,429,120

Fairchild Engine & Airplane Corp. declared dividend of 20 cents per common share, payable Dec 27 to holders of record Dec 7 Company announced backlog of $80 million

INDUSTRY OBSERVER

► Watch for the Navy to come up with some long distance flights to demonstrate increased range of its carrier based planes Navy strategy is now based on concept that carrier based planes can reach all important land targets in the world with a 2000-mile radius of action. Navy is sensitive to criticism that it does not now have any planes capable of putting this theory to test. Most likely candidates for the range demonstrations appear to be the Douglas Skyraider (AD-1) which has a 2500-mile range and the McDonnell Banshee (F2H-1). Both planes will probably be launched from a carrier in the Pacific and landed aboard a carrier off the Atlantic coast

► Air Force has confirmed redesignation of the North American F 86C to the F 93A due to the extensive structural, powerplant and equipment changes which make the new model virtually a new airplane As reported in AVIATION WEEK, Sept 27, 1948, the new model will have vastly superior performance made possible by added power from its General Electric turbojet engine, development on which has extended its output to the 6000 lb. static thrust region. The new model will also incorporate changes for ease of production and rapidity of assembly Air Force has 118 F 93A models on order

► Navy Douglas D-558-II Skyrocket has exceeded sonic speed in shallow dives using only the 3000-lb thrust Westinghouse 24C turbojet engine as power. Tests to date have examined the stability and control of the swept-wing research plane in the transonic zone using only jet power. To reduce the drag created by the flattened aft fuselage end at the four rocket nozzles a streamlined fairing cover has been installed. The Skyrocket now is being readied for rocket powered supersonic flight tests, which are expected to exceed the performance of the Air Force Bell X-1 by a substantial margin D-558-II is designed to attain Mach number 1.4 for research tests and is theoretically capable of Mach number 2.75 (1820 mph at high altitude)

► Conversion of the nine remaining Northrop YB 35 piston-engine Flying Wing bombers to eight-jet engine installations will not make them YB 49s The new airplanes will be designated RB 35B to signify a modification to a basic airplane, rather than an entirely new model One of the remaining ten airplanes will not be equipped but will be used as a static test ship Northrop also plans assembly of the first production RB-49A at its Hawthorne, Calif, plant with the remaining 29 being produced at Convair's Fort Worth division Northrop participation in the Convair program will be under the direction of Warren C Knienem, original project engineer on the Flying Wing bomber program

► Convair began delivering the B-36B to the Air Force at Carswell Field Forth Worth on Thanksgiving Day and expects to have six of the new model long range bombers delivered to the 7th Bomb Group by the end of November Carswell Field ramp and parking space is being enlarged to handle the new model B-36 and the 11th Bomb Group which will become the second 8th Air Force group to be equipped with the 10,000 mile bombers Convair is rolling one B-36B per week out of its Fort Worth plant

► Israeli Air Force is using Beech Bonanzas and Republic Seebees in its bombing operations against the Arabs Equipped for tactical operations, the Bonanza carries two men with Sten guns in the rear seats as defensive armament and a home made bomb release that cuts loose 100 lb bombs carried externally under the wings The Seebee is used without a door with 100 lb bombs tossed through the open hatch

► Commonwealth Aircraft Corp of Australia will soon begin a production program on latest British jet types CAC is now scheduled to build 50 Hawker N7s. Originally designed as a folding-wing Naval carrier fighter, CAC will make a fixed wing version for the RAAF Australian division of aircraft production is also scheduled to build 50 of a new British jet bomber design. Both the bomber and fighter will be equipped with 5000 lb thrust Nene engines which CAC is tooling up to build in Australia

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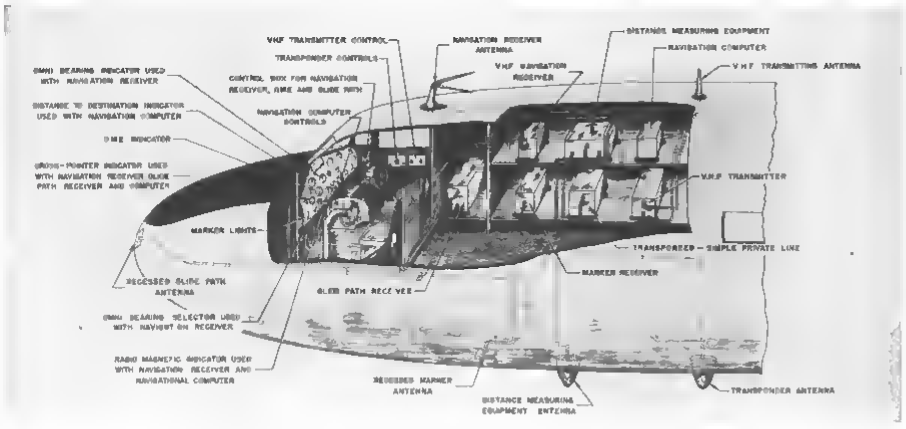


Basic airborne equipment requirements for the common system interim program

What All-Weather Airways System Needs

CAA gives first demonstration of air and ground devices used in interim program.

By Robert Hotz

INDIANAPOLIS—First peek at how the electronic, all-weather airways system (AVIATION WEEK, Mar 1) operates was offered here by the Radio Technical Commission for Aeronautics.

Equipment to be used in the interim period of all weather airways development (AVIATION WEEK, Mar 22 and Sept 6) was exhibited by RTCA in a two month series of flight and ground demonstrations at the Civil Aeronautics Administration's experimental station, at Weir Cook Airport. The RTCA demonstrations are intended as a progress report to acquaint future users with the equipment, bolster appropriations requests to Congress for funds to implement the billion dollar program, and to gather support for the program in the International Civil Aviation Organization conferences on standardization of navigation and traffic control procedures.

▶ **Rentzel Announcement**—Biggest news at the demonstrations was CAA Administrator Delos W. Rentzel's announcement that the very high frequency omni ranges will go into general use by both airlines and private pilots next summer. The omni range will be the second major component of the interim system to go into general use. The first was the VHF radio beam landing system (ILS) which has been in general use since last spring.

Rentzel said CAA now has 275 of its planned 600 omni ranges in commission with installations going at the rate of 50 new stations per month. First deliveries of airborne receivers to use omni-range ground station have already been made to the airlines. Initial deliveries of lightweight VHF omni-range receivers for private pilot use are expected next February. Rentzel estimated that by next July 400 omni-range stations would be in commission and some 700 airborne receivers will have been delivered to the airlines by Collins Radio Corp.

▶ **DME Progress**—Production specifications for distance measuring equipment (DME), the next major component on the schedule are now in process of being written by a special committee of the RTCA. Target date for complete operation of the interim system is still 1952.

Rentzel estimated total cost of the interim system at $375 million. Another $733 million will be required to develop and install the target system by 1962. The target system will be almost entirely automatic with human controllers operating largely in a supervisory capacity.

▶ **Cost Breakdown**—CAA technical experts offered following on the cost of equipping a single airport for interim system operations:

Omni-range ground station	$45,000
DME ground station	16,000
ILS radio beam landing system	121,000
Traffic control radar	103,000
Precision beam landing radar	97,000
Slope line approach lights	50,000
Total	$432,000

Airborne equipment to use these installations will cost the airlines about $12,000 per plane plus $3000 installation costs.

Details of airborne equipment costs:

Omni range and VHF radio receiver	$3,000
DME receiver	$2,000
Automatic off-course computer	$1,000

All airborne equipment is carried in duplicate for safety purposes, thus doubling the costs outlined above.

▶ **Missing Links**—Major items still missing from the interim system are airborne radar transponders and private line visual communications system. Radar transponders will be used for automatic aircraft identification on radar scopes and automatic transmission of altitude, course and distance for traffic control purposes. The private line visual communications system will carry all routine traffic control information to and from the ground to leave the now badly overcrowded voice channels free for emergency and special communications.

Most of the immediate effort of the Air Navigation Development Board (AVIATION WEEK, Nov. 22) research program will be devoted to developing these two items. Both are required for the target system as well as the interim program.

▶ **Progress Highlights**—Here are highlights on the current status of interim equipment displayed and tested at Indianapolis.

• **Omni-Range**—Major effort on this project is still aimed at improving accuracy of the bearings transmitted by the ground station. CAA now requires accuracy of plus or minus two degrees. Airlines particularly would like to see improvement in this minimum. CAA is now experimenting with round, plastic antenna housing, dark cloth shielding, and rotating antennae in an effort to improve the accuracy of omni bearings. Since the omni-range operates on line-of-sight, terrain interference must be avoided and siting the station is a major problem.

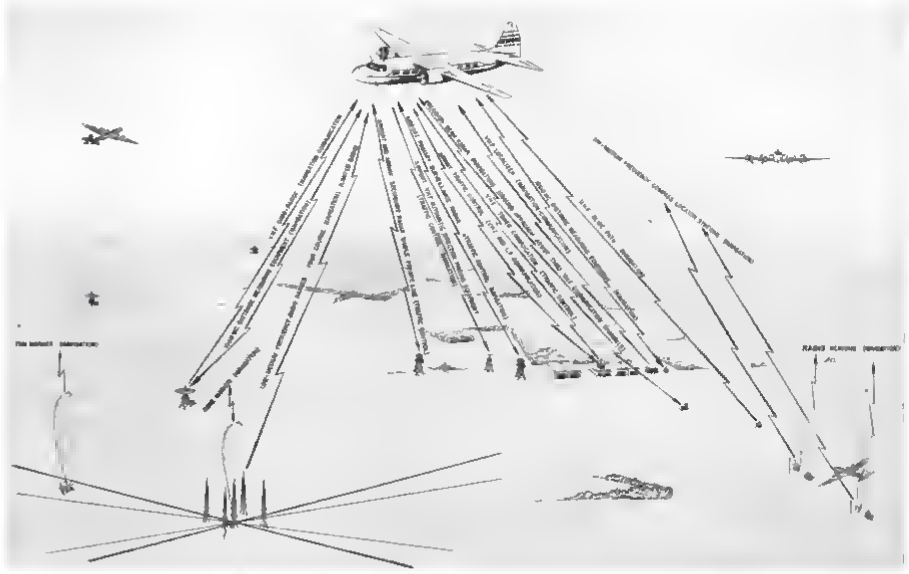
Airborne omni range receivers for military and airline use are being manufactured by Collins Radio Corp. Four types of lightweight VHF omni range receivers were shown at Indianapolis. These were made by National Aeronautical Corp. of Ambler, Pa.; Lear Inc., Grand Rapids; Aircraft Radio Corp. of Boonton, N. J. and Charles Banks of Aeronautical Radio Inc., Washington, D. C. Cost ranges from $1500 down to $230 for production models in quantities of 10,000. These lightweight VHF receivers were installed in a Beech Bonanza, TEMCO Swift and Piper Super Cruiser, where they have received considerable flight testing. Production models of several brands are expected to be on the market early next spring.

• **DME**—DME is rapidly passing out of the development stage into production. Two types of DME equipment have been developed by Federal Telecommunications Laboratories, Nutley, N. J., and the Hazeltine Electronics Corp., Little Neck, N. Y. Both worked under military research contracts with development models given to CAA for operational testing. Both types of equipment use time measurement of an electronic pulse from plane to ground and return to give linear distance of a plane from the ground station.

However they handle differently the problem posed by the relatively limited frequency spectrum available for this service. Federal uses narrow frequency bands with precise crystal tuning to get the required number of channels. Hazeltine uses broader frequency bands with each band divided into several coded channels. The Hazeltine system requires tuning for both frequency and codes.

Indianapolis currently has the only DME ground station that is operational. DME antenna are mounted on top of the omni range housings and in most cases the DME equipment will be located on omni range sites. Some consideration has been given to additional DME stations on instrument landing runways to give pilots an exact measurement of their distance from touch down.

DME cockpit indicators now use several types of altimeter-type dials which read distance to the ground station in land miles. Dials are marked for measuring up to 120 miles to a station and 30 miles overshoot. Airborne DME equipment weighs 45 lb. with no lightweight DME receivers yet in prospect.



Services provided from the ground by the common system interim program

for owners of personal type aircraft

• **Automatic Computers**—Three types of automatic off course computers were demonstrated One was an experimental model developed by CAA The others were manufactured by Minneapolis-Honeywell and by Collins Radio Corp Lightest of the trio now weighs 30 lb but by eliminating duplicate equipment already contained in omni range and DME receivers, production models can be cut to 12 lb. The development model computers have been thoroughly flight tested and gave a good account of their accuracy during flight tests on the Indianapolis omni range and DME stations in instrument weather They should appear in production models soon

• **Traffic Control Radar**—CAA is considerably behind military development of radar for traffic control purposes CAA has nothing comparable to the military CPN 18 traffic control radar now being built in quantity by Bendix Radio division at Baltimore CAA is just beginning use of the moving target indicator to eliminate ground clutter from stationary objects Experiments are under way using Dumont television and a special General Electric amber colored scope to get a radar scope that can easily be read under daylight conditions and does not require a darkened room

• **ILS**—Experiments are continuing to improve accuracy of ILS glide path and localizer signals A flared glide path has been developed that flattens out at an altitude of 50 ft and follows more accurately the pattern of a normal manual landing Previously the glide path was a straight line Antennae for the flared glide path are mounted on a 16 ft pole that puts them well above interference from ground traffic that was so vexing on the old glide path at many fields CAA has also built a wire reflector shield around an ILS localizer to curtail interference from railroad tracks and telephone wires that produced as many as 11 different on-course signals and bends in the false courses The parabolic wire shield looks much like the wire cage around home plate on a baseball diamond and has been successful in eliminating much of the interference with the localizer Studies have not yet been made to determine whether the shield weakens the back course of the localizer

Three models of automatic approach control equipment made by Honeywell, Bendix and Sperry for their respective auto-pilots were also demonstrated in automatic landings on the ILS system

• **Precision Beam Radar**—CAA had no late models of this equipment to exhibit Older models were demonstrated merely as a monitor for ILS approaches although all private planes and many military planes will use this type of radar as their primary landing aid

Piper-Stinson

Deal involves reported $3 million; merges two of top names in field.

Piper Aircraft Corp moved quickly last week to take over its new purchase, the Stinson division of Consolidated Vultee Aircraft Corp, as forecast in AVIATION WEEK, Nov 22

Terms of the transaction were unofficially reported at a figure of nearly $3 000,000 There were indications that only a small part of the transaction was in cash, and that a stock transaction and a time payment arrangement covered the balance

▶**Presidents' Comments**—William T Piper, president of the company bearing his name, and Floyd B Odlum, Convair president, declared the transaction was an advantage to both companies as well as to the personal plane industry. Piper told AVIATION WEEK from Lock Haven, Pa., that a shareholders' meeting would be called about Jan 16 to determine whether the name of the company would be changed to Piper Stinson Aircraft Corp

Representatives of the Piper organization went to Detroit last week for a flyaway of 10 new Stinson four place planes from Willow Run Airport A total of 375 Voyager 165s and Flying Station Wagons are stored there and are included in the purchase On a basis of the last quoted flyaway list price of $6444 for the Voyager these airplanes alone would have a retail value of nearly $2,500,000 In addition Piper obtains the Stinson parts inventory tooling and all equipment except the physical plant itself

▶**Distribution Plans**—Planes will be distributed from Willow Run for the present, while tooling and inventory will be moved to Lock Haven as rapidly as possible It is expected Piper will be ready to begin production of Voyagers at Lock Haven by the time the Willow Run stock of planes is depleted Experimental prototype of a new higher horsepower model of the Voyager which has been flying for some time and is now at San Diego also is included in the purchase and may be built later at Lock Haven, Piper said

The biggest transaction in the personal plane industry since Ryan's purchase of the North American four place Navion in June 1947 was viewed by qualified industry observers as a constructive step. It brings together two of the oldest and strongest names in the private user aircraft manufacturing field Stinson has been making airplanes since 1926 in the Detroit area Piper a former associate of C G Taylor in building the early Taylor Cub lightplane established his own company in the early 1930s at Bradford, Pa., and moved a short time later to Lock Haven

▶**Continue Models**—Piper said his company would continue to make its present models including the less expensive four-place Family Cruiser at least for the present, and "would let the customers decide" whether there was a sufficient market for both four-placers

Directly affected will be the owners of nearly 6000 Stinsons which have been sold since the end of World War II, who are now assured of a continuing manufacturer's source for spare parts and replacements

▶**Dealer Shifts**—The Stinson dealer organization will be coordinated with the Piper dealer organization as completely as possible although there will admittedly be problems of conflicting and overlapping franchises Piper said

The Voyager acquisition gives Piper a complete line of planes, from the small 65 hp two-placers up to the Voyagers. Since the Stinson planes like the Piper products are of steel tube and fabric construction no major problems of employe skills tools or materials are anticipated in taking on the Stinson production

Odlum pointed out that the transaction integrated two non-competitive lines into a single manufacturing and sales organization with consequent lower production and operating overhead costs and additional volume for individual dealers He said that Convair's military and commercial plane production schedules make it increasingly difficult for the management to continue operating Stinson

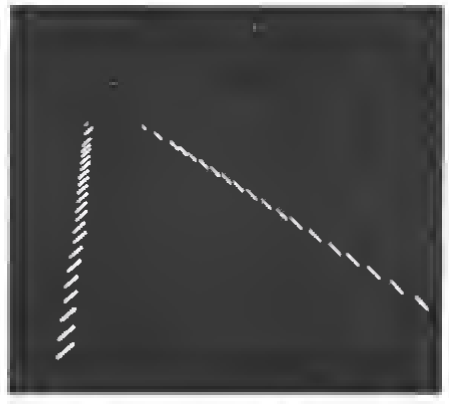
Lee Shain Stinson sales manager and other Stinson division sales personnel will be asked to join the Piper sales organization under the new setup

AIA to Choose New President

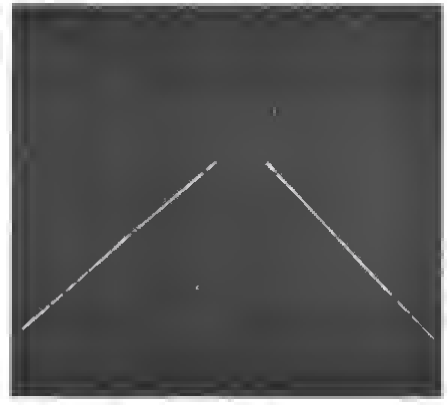
Selection of a new president of Aircraft Industries Assn to succeed Maj Gen Oliver P Echols (ret) was the principal item on the agenda of the AIA Board of Governors meeting scheduled Dec 4 at Arrowhead Hot Springs, Calif

Reports in advance of the meeting were that the nominating committee headed by E F Wilson chairman of the board was having difficulty in narrowing the long list of suggested candidates to a single choice.

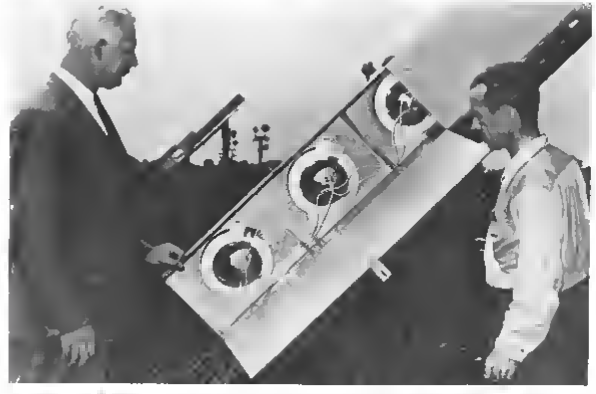
William M Allen president of Boeing for the west coast manufacturers and J Carlton Ward chairman of the board Fairchild Engine and Airplane Corp for the east coast companies, are serving on the committee with Wilson and Gen Echols who is acting in an advisory capacity



How slope line looks when approach is high and to right



and when approach is correct Indications come from



lights being shown by system developer H J Cory Pearson (left)

Slope Line Light Approval Near

Panel recommends that new system become approach standard for both military and civil plane use.

The slope line high intensity approach light system was headed toward rapid adoption as the new joint military-civil approach light standard last week

Airport Lighting Evaluation Panel modified its earlier proposal to recommend the slope line system for purchase but not to seek a standards change to go down the line for the slope line as a new standard by unanimous vote in Washington on Nov 18 ALEP recommendation will go to the Army-Navy Civil subcommittee of the Munitions Board on aviation ground and seadrome visual aids and then to the aircraft committee of the Munitions Board for final approval

▶**Approval Indicated**—Both groups have indicated informally they will approve the ALEP recommendation The ANC subcommittee will refer the proposal to its specifications group which will draw up detailed specifications for the new approach light system

Civil Aeronautics Administration now has $824,000 available out of its fiscal 1949 budget to buy approach lights The slope line system costs an estimated $50,000 per installation including installation costs CAA also revealed that it had used fiscal 1949 funds to purchase the approach lights at Idlewild, N Y, from the New York Port Authority and the American Gas Accumulator Corp (AGA) test installation at Newark which was later moved to Arcata, Calif Two AGA single row red approach light systems have been purchased out of fiscal 48 funds (AVIATION WEEK, May 24)

▶**CAA System**—The slope line system was developed by a group of CAA lighting engineers headed by H J Cory Pearson, who also had a voting membership on ALEP and was chairman of the steering committee which supervised test procedures at the Landing Aids Experimental Station at Arcata Pearson is also slated for membership on an engineers panel that will screen all future lighting systems offered for test

Slope line system consists of a double row of lighting units extending outward in a funnel for 3000 ft from the end of the runway Each individual unit consists of 10 250 watt sealed beam aircraft landing lights manufactured by General Electric Co, and mounted on a 15 ft long frame

▶**Glide Angle**—The units are installed at a 45 deg angle to the ground Intersection of the sloped units on each side of the installation are supposed to provide a visual glide path to aid pilots making approaches in poor visibility When viewed on course the slope line lights merge into a continuous line of lights pointing to the runway threshold On approaches where an aircraft is not properly aligned with the runway the slope line lights indicate the corrections required

First two experimental installations at

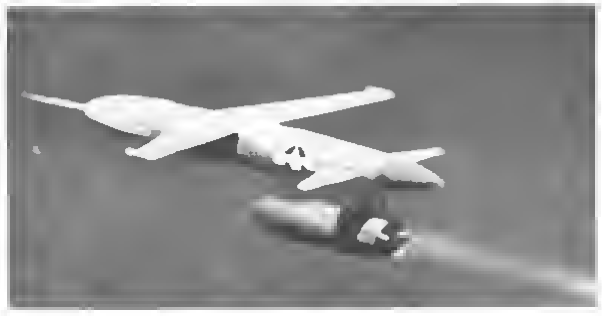
CAA's Indianapolis test center and Arcata were partially manufactured by the Ermarco Corp of Dayton, makers of airport and special lighting equipment Ermarco made and wired the units in which the lights were installed by CAA

▶**Preparing Specs**—CAA is expected to draw up detailed production specifications for slope line systems and call for bids on quantities that can be purchased with fiscal 1949 funds It is doubtful if CAA will get its authority to negotiate contracts instead of bidding before it is ready to buy slope line lights Air Force and Navy will also buy slope line approach lights for their domestic fields and foreign installations

ALEP based its decision to recommend the slope line system on tests conducted at Arcata on eight systems up to Oct 18 These included two types of Bartow lights, Sylvania, Westinghouse two types of American Gas Accumulator Corp , and a CAA devised center line system

▶**New Test Program**—Recommendations for next year's test program at Arcata include increased emphasis on high intensity runway lights, better methods of marking the touchdown area on the runway, and a further test of the center line system using lights of intensity comparable to the slope line unit This latter item is to satisfy the airline pilots represented on ALEP by Air Transport Association and the Air Line Pilots Association Both favor the center line system and were critical of the relatively dim red lights CAA used for this configuration

Gorgon IV is borne aloft under right wing of modified Northrop Black Widow .



. . . and has flown for 10 min before automatically released parachute lowers it to surface

Navy Reveals Ramjet Missile

Navy Gorgon IV, a pilotless missile powered by a ramjet engine, has stayed aloft for more than 10 min in tests at Naval Air Missile Testing Center, Point Mugu, Calif , setting a new record for ramjet powered missiles The flights were made last spring and held up by the Navy until last week

The slim missile is powered by a 20-in Marquardt subsonic ramjet engine mounted on a fin below the missile body It mounts swept wing and horizontal tail surfaces. the rudder being located between the engine and the fuselage The craft is radio controlled from the ground and is used as a research vehicle for powerplant, guidance, aerodynamics and other missile problems.

▶**High Fuel Consumption**—Unlike the supersonic ramjet which obtains a remarkably low fuel economy at high Mach numbers, the subsonic ramjet is characterized by an enormous fuel consumption and the 10-min endurance of the Gorgon IV is a substantial achievement The missile was developed and is being produced by the Glenn L Martin Co as one of a series of pilotless aircraft projects It has a span of 10 ft , is 22 ft long and weighs 1600 lb It has a fuel capacity of 116 gallons and ordinary 80 octane gasoline is used

Although the craft remained aloft for 10 min , the ramjet engine is capable of operating only about 4½ min on the available fuel supply The remainder of the flight consists of a radio-controlled glide into a target, or a parachute descent

The Marquardt ramjet engine is similar to that installed on the Lockheed P-80, which has flown on ramjet power alone (AVIATION WEEK, Nov 8) It consists only of a properly shaped tube seven ft long containing a fuel supply, a fuel pump and a flame holder assembly

▶**Air Launched**—Because the ramjet engine develops no static thrust, it must be launched at an airspeed of about 300 mph in order that combustion can be initiated The Gorgon IV is air-launched from an Air Force Northrop P-61 It is mounted in a special starboard wing rack, the port wing containing a droppable fuel tank to equalize weight and drag in flight The Gorgon IV is carried at a negative angle to insure its moving away promptly from the P-61 following its release

The missile is instrumented to obtain data on airspeed, altitude, drag, control position, acceleration, engine thrust and fuel consumption These data are fed into telemeter channels and transmitted to the ground through the nose antenna assembly They are recorded on the ground for subsequent study This nose antenna also receives signals from the ground station for the operation of the spoiler ailerons, elevators and rudders The flight is tracked by radar to check its speed altitude and location

Gorgon IV is equipped with a parachute assembly contained in the forward fuselage compartment which operates automatically to lower the craft safely

The Gorgon IV test program was moved recently from Point Mugu Calif to Chincoteague, Va , Navy's east coast missile center, because of its proximity to the Martin plant and the availability of more extensive armament, radio control and target equipment In addition, Navy is outfitting the U S S Norton Sound as a deck launching test ship

PRODUCTION

Steel Standards

An NASC subcommittee discusses stocking and use of metal and alloys.

If aircraft manufacturers could stock and use steel in sizes and types generally utilized by other industries, it would mean another step toward efficient and economical production through standardization

With this in mind, 75 representatives of steel makers, warehousemen and the 14 aircraft companies in the Eastern division of the National Aircraft Standards Committee met late last month at the Hotel Lexington in New York It was the first general meeting called by an NASC subcommittee on "Eastern Division Warehouse Stock List"

In their discussions on stocking metals, these considerations were in the background Steel manufacturers and steel warehouses are called upon to furnish aircraft companies with thousands of different sizes, shapes and types of alloy steel (just one steel round specification, for instance, is called out in nearly 50 sizes) The same is true in varying degrees of stainless steels, aluminum, magnesium and non-ferrous metals Steel made for limited use not only is expensive, it often is difficult to get

▶**Voluntary List**—More than a year ago, the aircraft manufacturers on the West Coast established a voluntary steel stock list Later it became a project of the Western division of NASC Since it has been in effect, the New York meeting was told, Northrop Aircraft has been able to reduce its steel stock by 90 percent

The eastern manufacturers expect to profit by the experience of the western group, but they are going much farther in standardizing the stock list To begin with, the project starts out with NASC blessing, when the list for all metals is compiled and proved workable (and adjusted with the Western division's list), it will become a national standard

▶**Steel First**—At the New York meeting two days were spent on alloy steels alone—sheet, plate, bar flat and tubing Next group of metals to be tackled, in a later meeting, will be stainless steels Then, in order, will come aluminum alloy (shapes plus extrusions), magnesium alloys, and non-ferrous metals such as inconel, monel, copper, bronze, etc

The New York meeting was just a starter, but preliminary agreement was reached to eliminate several sizes of round stock Possibly more important was approval of the American Standards Association sheet thickness gage

▶**ASA Gage**—Airframe manufacturers have used various gage systems for sheet steel, including some worked up by individual companies Now the industry has the plain statement from steel vendors that they cannot stock sheet to all these gages Adoption of the ASA thickness gage would reduce the stocking problem and put the aircraft industry in line with other industrial users of sheet steel

But adoption of the ASA gage as an aircraft industry standard creates a problem There are certain tolerances permitted on the thicknesses called out by aircraft manufacturers An ASA thickness that would do the job might not have the same tolerances So the New York meeting made a start at working out a conversion table for the period during which the industry would shift to the ASA gage

▶**Air Force Backing**—That shift will come gradually, as will the entire standardization of the stock list The subcommittee chairman, C Schindler, of Fairchild Engine & Airplane Corp , has been working on stock list standardization for a year, although the subcommittee was formed only a few months ago It will be perhaps more than a year before the complete stock list is approved and in operation

The steel list might come quickly So, too might the adoption of ASA thickness gage as an NASC standard The Air Force is rooting hard for stock list standardization, knowing it will simplify a job the government or the Air Force might yet have to tackle allocation of steel

Aviation Maintenance Corp. Reactivated With New Work

With contracts from Aerovias Guest, Air Ceylon, and Pacific Northern Airlines for $300,000 worth of overhaul work on five DC-4s, Aviation Maintenance Corp., Van Nuys, Calif., has been reactivated It is not a huge hunk of business to a company which once reckoned its contracts in seven figures, but it enables AMC to resume operations after having been closed since last May President Regan Stunkel informs AVIATION WEEK that his company at no time has been in dire financial straits A $1 million Reconstruction Finance Corp loan has been paid off and AMC officers now plan to make the most of a slowly reviving market for their maintenance facilities

The once-contemplated sale of a large block of equipment to the Argentine government fell through, supposedly because of dollar exchange difficulties

Under its new operating plan AMC will retain enough equipment to keep busy as many as 700 workers, and will dispose of the rest as rapidly as good markets appear. Said Stunkel "We certainly will not need all of our 27 lathes, 265 typewriters, 27 trucks, and two airplanes"

What AMC plans to do is to campaign vigorously for maintenance and overhaul business, and to sublease hangar space and equipment to small manufacturers of aircraft components

Fire Control Production

U S Air Force is expanding production of fire control systems in an effort to break a bottleneck in heavy bomber armament.

The former Remington Rand propeller plant in Johnson City, N Y, will be put back into production by General Electric Co under a $6,500,000 USAF contract to manufacture fire control systems GE has leased the plant from War Assets Administration and will utilize USAF-owned production facilities

Fire control equipment, which is government-furnished equipment, has been one of the major bottlenecks in the expanded aircraft manufacturing program with a lead time of up to two years required on the remote-control, electronic armament systems now in use GE expects to begin production at Johnson City in about nine months when installation of production machinery is completed

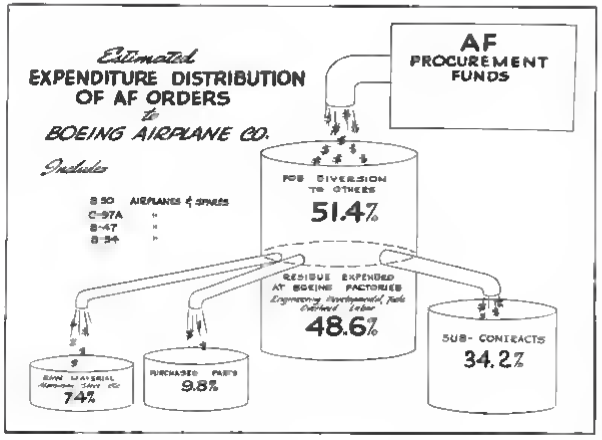
WHO'S WHERE

Foote Bros. Gear & Machine Corp Chicago, Ill , named R C Brown director of sales He has been president of Brown-Steele Co Dallas Tex

Curtiss-Wright Corp elected William C Jordon to the board of directors He is vice president and general manager of Wright Aeronautical

Plomb Tool Co., Los Angeles, appointed Thomas B Moule sales manager He has been assistant director of sales He formerly was sales manager of the Republic and the Northern Aircraft Products divisions of Aviation Corp

General Electric Co. elected George G Montgomery, San Francisco corporation executive, to the board of directors Dr James R Donnalley was named manager of the silicone manufacturing plant at Waterford, N Y He has been with the company five years



How Boeing Spreads Its Work

Just how Boeing Airplane Co intends to meet the industry's greatest big aircraft production schedule is graphically illustrated by these two charts.

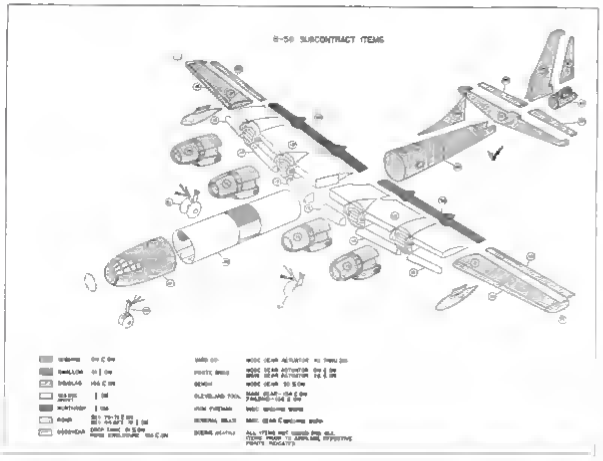
F. P. Laudan, Boeing vice president-manufacturing, says that no single aircraft manufacturer could undertake a large program for the Air Force without having the help of other aircraft manufacturers as well as of other industries. Although Boeing is doing all final assembly on the four airplanes in its Seattle and Wichita plants, the subcontracting program is the largest undertaken in peace, and before it is finished might exceed the extent of the wartime B-29 subcontracting set-up.

► **Dollar Allocation**—Of every dollar paid by the Air Force to Boeing for the 325 B-50s, B-54s, C-97As and B-47s involved in the subcontracting program, the company has a little more than 48 cents to meet its own costs. The major part of the remainder (34 cents) goes to the subcontractors, with 10 cents being spent for parts and 7 cents paid out to suppliers of raw material.

Some of the companies furnishing parts for the four planes: Bendix Aviation Corp., Cleveland Pneumatic Tool Co., Foote Bros. Gear and Machine Corp., Iron Fireman Manufacturing Co., General Mills, Inc., and Goodyear Aircraft Corp.

► **Subcontractors**—In the subcontracting program are the bluebloods of aircraft manufacturing as well as some of the smaller companies. Curtiss-Wright Corp., Douglas Aircraft Co. (which has just announced a new $3,500,000 order for 200 16-ft. fuselage sections of the B-50), Consolidated Vultee Aircraft Corp., Northrop Aircraft, Inc., Rohr Aircraft Corp., Ryan Aeronautical Co., and Swallow Airplane Co.

The exploded view of the B-50, below, shows the extent of the subcontracting on this airplane alone. Circled numbers are the company's airplane section numbers. The numbers following the subcontractors' names indicate the airplanes which receive those parts. For example, the components built by Convair will go into the 216th B-50 and those that follow.



PRODUCTION BRIEFS

Grumman Aircraft Engineering Corp., Bethpage, N. Y., has completed the first production F9F Navy jet fighter. Production of more than 400 F9Fs will continue at about one a day.

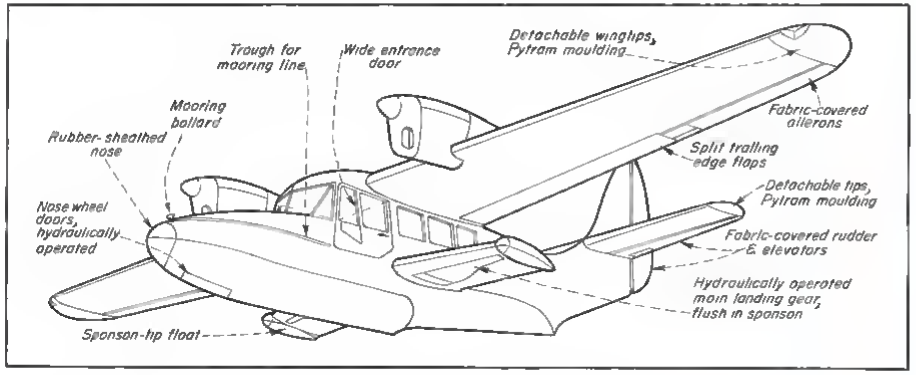
Westinghouse Electric Corp. has ended production of the J-30 (19B) jet engine at its South Philadelphia plant. Total of 261 J-30s were built. 130 by Pratt & Whitney Aircraft division of United Aircraft Corp. South Philadelphia continues production of the J-34 (24C).

Piasecki Helicopter Corp., Morton, Pa., has reorganized the production department to improve deliveries. A new production manager, W. C. Miles, has been appointed, as well as a schedules manager, Walter V. Trelease. Company is seeking to increase its engineering staff from 150 to about 200.

General Electric Co. has opened a new $3,000,000 motor manufacturing plant at San Jose, Calif. The 144,000 sq. ft. factory eventually will produce all GE single-phase capacitor integral motors. At peak production early next year, output is expected to be 1500 1 to 500 hp. motors a week.

Texas Engineering & Mfg. Co., Dallas, has received contracts to produce for Air Force and Navy automatic code flasher lights designed by W. R. Lightbody, Inc., of New York. The new type flasher, known as "Flash-Aire," also will be available for personal planes.

On its USAF contract to recondition C-54s used on the Berlin airlift, TEMCO expects this month to reach a rate of 25 per month.



"Tribian" Amphib Attracts Wide Interest

Prototype of new British design will accommodate 3 to 4 passengers. Feeder, military versions planned.

(McGraw-Hill World News)

London—An encouraging number of inquiries from many countries have followed the initial announcement of the 'Tribian," a new all-metal amphibian personal plane being developed by Sponson Developments Ltd., of England. The company hopes to have a prototype in the air early in 1949.

The Tribian, even in model form, was not on display at the recent Society of British Aircraft Constructors exhibit at Farnborough, since the firm is not a member. It was scheduled to be shown, however, at the aircraft display in Oslo where it was to be the only British aircraft on exhibit.

► **Initial Model** — Tentative arrangements have already been worked out to license a Norwegian builder for the Scandinavian countries. Quantity production in Britain will eventually be entrusted to a large wartime aircraft builder. This company, not now building aircraft, is understood to be willing to invest in the project.

Initial version of the Tribian will be a twin-engine 3- to 4-passenger plane. Construction of the mockup of the Mark 1 is nearly complete at the Redhill, Surrey, works of Tiltman Langley Laboratories Ltd. Marcus Langley, managing director, is the key figure in the design work on the Tribian, assisted by Sponson Developments' own staff.

► **Airline Interest** — Many interested parties have asked for a plane with greater seating capacity, hence the company also expects to proceed immediately with a 5- to 6-passenger version aimed at the feederline transport market.

British South American Airways, which has just placed an order for three Short Scaland 5- to 6-passenger amphibians, is known to be interested in the Tribian project. A small feeder transport amphibian of this type would have great potential usefulness in enlarging BSAA's West Indian interisland services.

British European Airways, also, is likely to consider the Tribian for possible expansion of BEA's internal services within the British Isles. An amphibian such is this could take advantage of the many natural harbours, lakes and waterways in the main islands as well as in the numerous outlying islands too small for a land-based operation. Services to seaside resorts also should be feasible and potentially profitable.

In addition to the two British airlines and the Scandinavian market, Sponson Developments hopes to cash in on the interest already shown in their project by operators in the Far East, New Zealand, China, the East Indies and India. In all these places the plane could be operated, either by an individual owner, or as a feeder, from many beach landing strips, to the few major airports.

► **Other Types**—A military version of the 3- to 4-seater is also contemplated, and for the future, a four-engine, 12- to 20-passenger transport to meet what the company calls special requirements. This indicates more competition for the Miles Marathon and the de Havilland 'Dove.'

As pointed out by the plane's designer, use of sponsons gives several marked advantages. They provide greater stability afloat than wing-tip floats, being airfoil-shaped they give additional lift and thus reduce necessary wing-area, flow of air underneath the sponson helps break away from the water on takeoff, and structurally the sponsons offer a stiffer support for the undercarriage than does a wing.

Design Details

Intended to fulfill all the International Civil Aviation Organization requirements including takeoff at altitudes up to 5000 ft. above sea level, the Tribian will be a very clean airplane in flight. Main landing gear wheels retract into the sweptback sponsons, rather than into the hull, thus permitting a wider wheel-track and extra room in the passenger compartment.

The nosewheel Sponson Developments own design (although some

Tribian—Specification Data

Wing	
Span	44 ft 6 in
Root chord	8 ft
Tip chord	4 ft 6.84 in
Gross wing area	283 sq ft
Aileron area	26 sq ft
Flap area	32 sq ft
Tail	
Tailplane area	29.4 sq ft
Elevator area	22 sq ft
Fin area	12.7 sq ft
Rudder area	9 sq ft
Fuselage	
Length	34 ft
Height to fin tip	13 ft 2 in
Undercarriage track	12 ft 4 in
Weights	
Empty weight	2893 lb
Disposable load	1321 lb
Maximum gross weight	4214 lb
Wing loading	14.9 lb/sq ft
Power-loading	13.6 lb./hp
Provisional performance with two Gypsy Major engines (145 hp)	
Maximum speed (sea level)	153 mph
Cruising speed (sea level)	140 mph
Cruising speed (10,000 ft)	136 mph
Stalling speed (flaps down, engine off)	55 mph
Initial rate of climb	900 fpm
Absolute ceiling	16,400 ft
Service ceiling	14,300 ft
Takeoff distance (land)	250 yd
Takeoff distance (water)	300 yd
Takeoff time	25 sec
Range, full load (with 60 gal. of fuel)	550 mi
Range, two passengers	800 mi

what resembling that used in the Grumman Mallard), folds straight back during retraction, and is completely housed by the fully closing hull-doors. All wheel-retracting mechanisms are hydraulically operated.

▶ **Wing Details**—Construction of the wing is conventional. It embodies two spar box-frame design with fabric covered ailerons and split trailing-edge flaps.

The two spars are picked up by the two main load-bearing frames of the fuselage, as are the two spars of the sponsons.

Flexible, bag-type fuel tanks are housed in the wing roots.

Wing tips and tail plane tips are detachable molded shapes made from "Pytram," a new laminated paper-base resin bonded structural material, which should facilitate replacement in case of damage.

Sweptback sponsons in addition to housing the main gear, have air-filled, metal-tank, float tips and buoyancy chambers at the roots.

▶ **Hull**—This structure is an improvement on the faired-step design. It incorporates a box-type keel member made up of two keelsons, braced together, and spaced 12 in. apart, running the full length of the hull to the rear edge of the step. This construction provides a strong keel, permits the nose-wheel to be retracted between the two keelsons, and permits a dropped walk-way in the passenger compartment to afford 6 in. more headroom.

A generous luggage compartment is provided behind the rear seat. To carry larger amounts of freight, the hull can be modified to provide a very large loading door. The whole panel between two frames and extending from the dorsal centerline to below the window line could thus be dropped down for loading purposes.

Two watertight bulkheads, fore and aft of the cabin-and-luggage compartment, plus the watertight cabin floor, make for maximum safety on the water.

A moulded rubber nose-sheathing is incorporated.

▶ **Landing Gear**—Goodyear castering wheels are used for the landing gear. The Goodyear brakes are operative even submerged and can be used in shallow water taxiing.

For operation on skis, the entire landing gear and sponsons are detachable to afford a gain of 300 lb. disposable payload. Ski struts would attach to the sponson roots.

▶ **Engine, Props**—The company has decided to incorporate de Havilland engines as standard equipment in all versions of the Tribian to capitalize on this organization's world-wide network of servicing facilities and stocks of spares.

Variable-pitch constant speed props are to be included. At the moment, both de Havilland and Aeromatic types are contemplated, the latter having the weight factor in its favor.

Standard equipment includes full instrumentation (Smiths) and a crystal-controlled twin-channel VHF transmitter-receiver.

▶ **Performance**—The Tribian has a range of 550 mi. with a full disposable load of 1321 lb., that is, pilot, 3 passengers, 134 lb. of baggage, and 60 gal. of fuel.

Alternately, with pilot and 2 passengers, 449 lb. of baggage or freight and 40 gal. of fuel can be carried the same distance.

Range and payload estimations indicate that it can carry 1000 lb. of useful load over 250 mi., 600 lb. over 700 mi. With a 200 lb. load, as when ferrying, it has a range of 1100 mi.

Tentative selling price for the 3 to 4-passenger Mark I Tribian is equivalent to $34,000 including radio.

At this figure the company estimates they will break even on a production of 72 planes.

The price of the 5 to 6-seater would, they estimate, run to about $40,000.

New Computer Solves Complex Problems

An electronic "slide rule" has been designed that solves problems of motion as fast as it takes for the motion to happen, and gives answers in a steady stream on a special tape.

Developed by the Goodyear Aircraft Corp., Akron, Ohio, under special contract with the Air Force, this machine operates on power supplied from any wall socket. It is 2 ft. square 6 ft. high.

A panel similar to a telephone switchboard, with a number of plug sockets is used to simulate different equations by a variety of circuit combinations. Known constants in the equation are set into the machine by varying the value of the electrical resistance connected to the twenty amplifying units. Answers are obtained by translating the electrical impulses into the motion of a recording pen.

A single computer is designed to perform twenty separate mathematical operations. Two or more units may be wired together for more complicated problems, and it's claimed that this hookup will solve approximately 90 percent of all computations that face the aircraft research engineer.

New Knock Rating Near for Aviation Fuel

Procedure is being devised to cope with perplexing problem posed by powerful fuels for piston engines.

By Robert McLarren

A new method of rating the knocking characteristics of aviation fuels, may soon solve the octane muddle existing in this field. The procedure has been developed by the Coordinating Fuel and Equipment Research Committee of the Coordinating Research Council, Inc., the official fuel rating body in the United States.

The new approach has been devised to keep pace with the phenomenal increase in aviation fuel knock ratings, which have already outmoded all of the previous scales and test methods used.

▶**Octane Created**—Knock ratings for fuels were born 20 years ago when Dr. Graham Edgar discovered iso-octane (2,2,4-trimethylpentane) and observed that it knocked less than any gasoline then available.

At about the same time he prepared n-heptane and observed that it knocked more than any gasoline. By thus bracketing the entire range of motor fuels, Dr. Edgar foresaw the possibilities of establishing ratings of knocking characteristics for comparing all available gasolines.

His original proposal was that U. S. motor gasoline specifications be revised to require that the knocking tendency of a given fuel be equal to that of a blend containing not less than 45 percent iso-octane in n-heptane, or a 45 octane fuel.

▶**Method Adopted**—After considerable research, problems of standardization of a test engine and numerous changes in the original proposal, the Cooperative Fuel Research Committee adopted the procedure now in use, in 1930.

The iso-octane is given a rating of 100 and n-heptane a rating of 0. A standard CFR (Cooperative Fuel Research) single cylinder test engine is used and the knock rating of a new fuel is determined. A blend of iso-octane and n-heptane is then varied in the test engine until identical knock characteristics are obtained. The percent iso-octane is thus the "octane" rating of the fuel.

▶**100 Plus Problem**—Obviously, this octane rating system is applicable only to fuels having knock ratings equal to or below that of iso-octane.

It was not long before aviation fuels were available with 100 octane ratings and the system had reached the limit of its usefulness. It was decided that given amounts of tetraethyl lead would be added to the iso-octane, which earned its knock rating beyond the 100 mark.

This system followed the same procedure as the original octane-rating method and new fuels were tested in a standard engine under standard conditions and the knock performance determined. A blend of iso-octane and tetraethyl lead was then derived with the same knock rating.

▶**Shortcomings**—Meanwhile, as use of the CFR method spread and experience was gained in accuracy, several basic shortcomings of the system were revealed. For example, it was found that the use of fuel additives did not vary the scale linearly, more anti-knock agents such as tetraethyl lead, benzene, alcohol, analine, etc., being required proportionately as the scale increased.

Examination of this effect revealed that the original octane scale reaches infinity at about 120, that is, regardless of the amount of additives provided, the knock rating of a fuel could not have a value in excess of 120.

▶**Performance Number**—Another drawback to the system is that the octane rating of a fuel varies from engine to engine, leading to inconsistences in results when a specified octane fuel is used as the basis for aircraft design performance.

To solve this problem, the Army and Navy created the "performance number" system—a series of numbers extending from 50 to 160 but designed primarily to apply to fuels with a rating of 100 or more.

In this system, a fuel is tested in a variety of engines ranging from a single-cylinder test unit to a double row aircraft powerplant and the average knock rating of the tests given a performance number.

The method is the same as the original but manner of reporting results is different. For example, if a new fuel has a knock rating the same as iso-octane plus 2.0 milliliters of tetraethyl lead, its rating is reported as 138 performance number, according to a chart (Fig. 1).

▶**Mixture Problem**—Still another drawback to the original system was the variation of knock rating with mixture ratio.

Early in World War II the services requested some means of evaluating the rich mixture performance of fuels and the CRC created the F-4 supercharge method. This again is similar to the original test method but with variations in test procedure and engine.

The F-4 system proved satisfactory for rich mixture studies but it was not possible to obtain the same accuracy and ease of operation under lean mixture conditions. The F-3 aviation method was then developed to afford the octane rating of fuels under lean mixture conditions. With both methods, a complete range of octane ratings was determined for any given fuel and the results given in the form of a combination rating, such as 115/145, indicating a fuel with a lean mixture rating of 115 octane and a rich mixture rating of 145.

This fuel, specification AN-F-33, was used in the latter part of the war, but emergency power not being required in peacetime flight operations its use has been confined to special flights only and the 100/130 grade, specification AN-F-28, is now standard in both services.

▶**New Method Asked**—After V-J Day, however, the services received their demand for even higher knock rating methods since several postwar high-power aircraft engines depend for maximum performance on extremely high knock rated fuels.

Service use had determined that the F-3 method was not wholly satisfactory for lean mixture ratings above about 140 performance number and became useless above 155 performance number. Also, combined use of the F-3 and F-4 methods required dual equipment and tests and refiners expressed increasing interest in a single method that would determine fuel characteristics.

▶**Triptane Selected**—The problem of producing a single reference scale for fuel is a difficult one. The scale must be continuous, it should involve a minimum number of reference fuels and it should cover the complete range of knock-limited performance likely to be encountered.

As early as 1944 the Aviation Fuels Division of CFR began an extensive study of the problem of creating a new scale and a new reference fuel for operation in a new test engine.

It was obvious from the start that the type of reference fuel used would influence largely the scale finally derived and this was the first problem attacked.

After examining a number of fuels and the possibility of adequate supply of ingredients, the committee selected triptane (2,2,3-trimethylbutane) as the basic ingredient. The resulting reference fuel was a leaded blend of triptane and normal heptane, designated LTrH.

▶**New Scale**—The past four years have been devoted to an examination of all available and proposed scales to determine which one most closely satisfies the requirements for a new scale outlined above.

During the course of these investigations it was observed that plots of scales based on iso-octane became discontinuous after passing 100 (Fig. 2). It was also observed that plots of the reciprocal of the knock-limited indicated mean effective pressure against the percentage LTrH produced a straight line (Fig. 3). To avoid excessive decimal points, the reciprocal was multiplied by 1000 to produce an ordinate of 1000/imep.

Extensive tests are indicating that this leaded triptane-heptane possesses all the requirements for a new scale.

▶**New Engine**—To provide the data required for this new scale, the F-21 method has been developed which combines, with a single engine and test procedure, both the F-3 and F-4 methods formerly used. It enables the fuel to be tested over both lean and rich mixture conditions and range of 150 to 350 F.

The new engine, manufactured by Waukesha Motor Co., is equipped with two fuel pumps, one for each of the fuels, permitting rapid change between the test fuel and the reference fuel before the engine temperature has a chance to change.

▶**Data Recorded**—The engine is set in operation and its imep (sum of brake mean effective pressure and friction mean effective pressure), fuel-air ratio, coolant inlet air, oil, and fuel temperatures, and manifold oil, air and fuel pressures are recorded.

Fuel supply is then switched and the recordings repeated. The mixture is then changed over a fairly wide range and the fuels switched at each ratio.

Results are then plotted as imep against fuel-air ratio (Fig. 4). When the test and reference fuels follow each other very closely at two or three different intake air temperatures then the test fuel has the same rating as the reference fuel.

The reference fuel is then looked up on the detonation index (Fig. 5) and the test fuel is then rated according to this index.

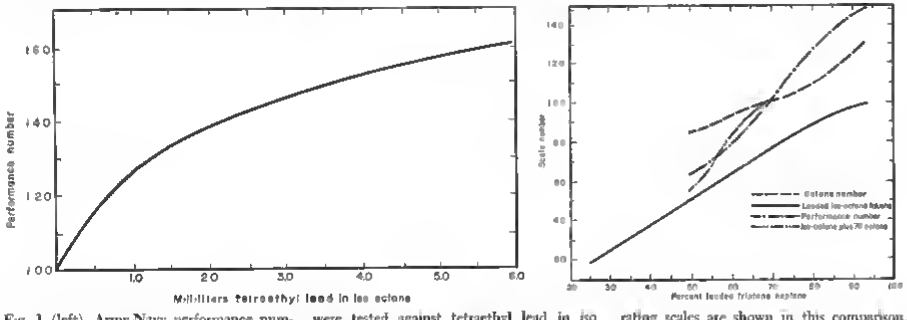
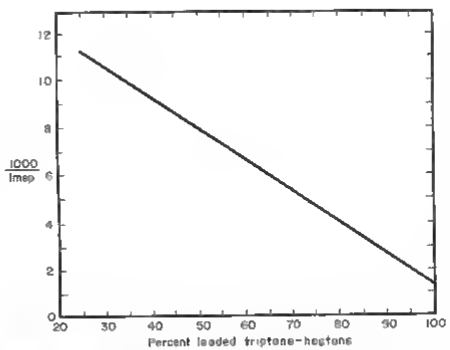


Fig. 1 (left) Army-Navy performance number scale developed during war to cover fuels with knock ratings higher than 100. Fuels were tested against tetraethyl lead in iso octane, and rated according to this curve. Fig. 2 (right) Dissimilarities of various knock rating scales are shown in this comparison, which proved basic failings of scales heretofore employed.



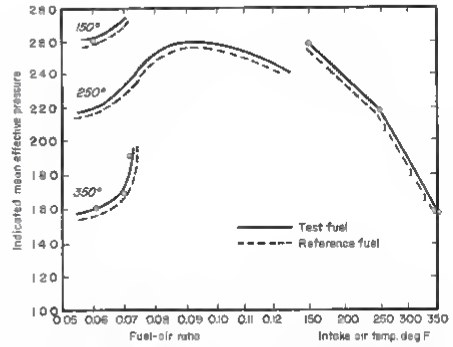


Fig. 3 (left) Excellent reliability of the reciprocal imep, against leaded triptane-heptane is shown here. Fig. 4 (right) Type of data obtained from mixture trials conducted with the new F-21 method shows wider coverage of tests over previous methods, accompanied by freedom of conditions tested. All of the data are measured easily in the test engine.

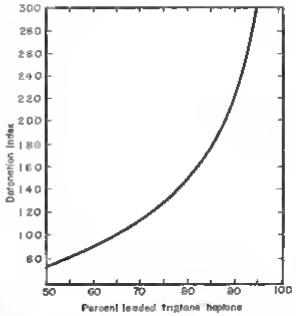


Fig. 5. New scale uses detonation index. Ability to cover new fuels is shown in tendency of parameter to become asymptotic at higher index numbers. Smooth curve indicates reliability of scale over complete range of conditions.

Oil reclamation program is aided by maintenance tugs which tow tanks of accumulated used lube to facilitate drainage from craft on the line. Tanks were B-29 units.

Oil Re-use Offers Big Cost Saving

Re-refining procedures of the Air Force and airlines could also be economy measure for manufacturers.

Faced with dwindling stockpiles of aircraft engine oil and the further problem of how to buy 75 cents-a-gal. lube on a 62 cents a gal. budget, the United States Air Force has put the collection of grade 1120 oil drainings on a nationwide basis—Air National Guard and Air Reserve included.

During World War II, reclaimed oil saved the Air Force over $6,000,000 annually.

Re-refining returned 1,000,000 gal., of crankcase drainings a month to top-grade aircraft engine oil specifications.

"After the war, when the critical need to conserve oil disappeared, USAF's re-refining program dropped off."

▶**Reclamation Statistics**—Now, with the new nationwide program only a few months old, 20 cents-a-gal. re-refined oil amounts to 25 percent of the total now issued by USAF.

Last year (fiscal 1947-48), of a total of 5,877,000 gal. issued, nearly 1,000,000 gal. were restored for regular aviation use.

Goal is to raise the rest of the country to the all-out record of the Oklahoma City Air Materiel Area, where 40 percent of oil issues were reclaimed.

This Area, because of its outstanding record, was selected to be the host for USAF's Oil Reclamation Conference held on Nov. 1-2.

USAF plans to apply re-refining to motor vehicle crankcase drainings as well. Later, it aims to include most of its overseas services in the program. Alaska is first on the overseas list.

▶**Airline Participation**—Re-refining is not new, either to USAF or to the rest of the country. U. S. Army Air Forces tried it successfully in the first world war. With fleet operators (of trucks, cabs) and not-so-rich motorist as main customers, it has been a growing U. S. industry since the early 1930's.

U. S. re-refining capacity has increased 400 percent since 1939, with present annual production at over 45,000,000 gal.

American Airlines has been testing re-refining methods since well before the war.

Today both American and Pan American re-refine most of their crankcase drainings from periodic oil changes and engine overhauls.

American now re-refines 1,800 gal. monthly at La Guardia Field. When their Tulsa plant gets into operation, the figure is expected to run close to 3,000 per month.

Both airlines operate their own equipment using "pot" (portable) stills made by Refinoil Mfg. Corp., Kansas City, Mo. However, this procedure isn't compulsory, since commercial re-refiners are able to restore oil to any required specifications.

USAF has all its work done by commercial processors to bring used oil back up to new lube specifications.

▶**Cost Data**—Cost of re-refining units run from $750 for a 2½ gal.-per-half hour portable still (made by Precision Processes, Kansas City,) up into the hundreds of thousands of dollars for full scale refineries, replete with fractionating towers capable of handling thousands of gallons a day.

Expense of re-refining oil (including

depreciation, materials, labor, power, etc) ranges from 8 to 20 cents a gal If special chemicals are added to make an additive oil the cost goes up, but never roughly over a quarter the cost of new oil of the same quality

Cheaper processing comes with portable stills which, generally, don't process as thoroughly as larger units

Installations with a capacity of around 5,000 gal a month and capable of meeting 1120 requirements run about $10,000 up

► **Considerations for Operators**—Airlines can figure easily the advantage of re-refining Amount of drainings at any one central point is the main factor This against total oil requirements will show what proportion could be saved Usually from 75 to-90 percent of the drainings to be processed are finally recaptured as good oil

Airline petroleum engineers point out that re refining would be a greater advantage to aircraft and engine manufacturers than to airlines Reason is that because of frequent drainings (after tests etc) they discard more than they burn

Some estimates put manufacturer's savings at 60 70 percent of total oil requirements, against less than 20 percent for the airlines

► **Process Details**—Re refining is actually a second refining, with certain unnecessary steps omitted These include extracting and de waxing, which, having been done originally are not necessary during re-refining, since waxes once removed don't recur

Main object of re-refining is to remove acids, aldehydes and other oxidation products, water, light ends such as gasolene and kerosene, sludge, silica, lead compounds, metallic dust and other impurities which were not in the new oil By subjecting dirty oil to proper processing, it is possible to return it to new oil quality

Practically all re-refining follows the pattern of one or the other of two main processes used by the petroleum industry These are the steam pressure still process and the newer lower temperature, vacuum distillation The two processes are similar, except that in one, distillation and fractionation occur at about atmospheric pressure and in the other, under a vacuum

Steps in re refining basically break down as follows:

- 1 Removal of solid particles by settling, centrifuging or filtering or all three
- 2 Sulfuric acid treatment to precipitate gums, grease and other matter
- 3 Alkaline treatment to neutralize acid compounds
- 4 Water wash to remove soaps formed in neutralization
- 5 Mixing with special clays, such as Fuller s earth, to bleach oil and absorb certain impurities In some cases filtering is immediate
- 6 Distillation—heat and steam processing either in the filtered oil or the oil-clay mixture, either under pressure or in a vacuum to drive off moisture, light ends and other volatiles
- 7 High pressure filtering to remove clay and other solids (Step 1 is sometimes combined with this procedure With respect to step 5, favorable procedure is to leave clay in residue until this step—7)

Sulfuric acid treatment (step 2) is one which should only be used where "mongrel" wastes are to be processed, such as those picked up from miscellaneous stations

Heavy greases and other probably impurities in these drainings more closely approach crude oil and react favorably to sulfuric acid However, carefully collected wastes of the same grade oil which only contain engine contaminants are liable to become over refined and lose some of their original lubricating qualities

► **Additives**—Also lost in re refining are any chemical additives which may have been put in the oil by the original manufacturer to slow sludge and acid formation These can, however, be added again after re-refining

Re refiners who wish to make an additive oil don t need a special laboratory to do it Petroleum companies and major chemical firms will run tests on the base oil sample and tell the re-refiner what he should add This service is free of charge—only requirement is that the re-refiner buy his chemicals from the testing firm

Most re refiners, while not having sufficient laboratory facilities for additive tests, are able to check on basic oil characteristics, such as flash and flare point, viscosity index, carbon content, etc

► **Vacuum vs. Pressure**—Of the two processes, vacuum and pressure, the former method seems to be more satisfactory

Newest commercial re-refining plant, Worthington Refiners Inc., Rosslyn, Va., now being rebuilt, after a fire, as a $250,000 vacuum process plant, is capable of handling 9,000 gal daily—hopes to get some aircraft business from Washington National Airport

Main advantage of the vacuum seems to be that it yields a quality oil in less time, at less expense, and with a smaller installation Basic oil specifications are more readily met

Future of re-refining seems certain. Army is preparing to test waste collection and re-refining over an entire army area

It points out that the collection problem for the Air Force is relatively simple because of its few bases, whereas their problem is of a much more complex nature

If it proves economical, Army plans to extend the program throughout the country.

Meanwhile, re-refiners are keeping one eye open for new customers—a few are even checking the export market Other eye is on the 11,900,000 barrels of used oil which annually go down the drain

Aluminum Foil Used In Fire-Fighting Suit

A new fire fighting garment composed of laminated aluminum foil and cotton cloth, capable of withstanding the 1500 1800 deg F heat of oil and gas fires, has been developed by Clothing Branch, Aero Medical Laboratory, Air Material Command

The new suit approaches 100 percent in its ability to reflect the infra red rays of radiated heat

It weighs only 8.32 lb compared to the 22 05 lb and 43 84 lb for suits now in service, permits greater ease of movement, and requires a shorter period of time to put on

The garment's vision plate is a high vacuum deposit of gold on glass which serves as an excellent reflector of heat, although possessing ability to pass visible light

However, for widespread use, a less expensive method is being sought, one possibility being a plate that absorbs rather than reflects heat rays, since heat absorbing glass is available to withstand the heat to which the suit would be subjected

Although the suit reflects rays of radiated heat satisfactorily, further development is required to produce an aluminum foil unit that does not tear, scuff or peel when the wearer comes in contact with protruding objects

One approach to this problem is an investigation of methods of impregnating or processing other materials to render them heat reflecting

Another development with the new type of garment is an aluminum foil cloth which retains heat rather than keeping it out, for use as an arctic suit By using an aluminum foil inner layer, the Clothing Branch believes body heat may be reflected as warmth

"Give us the tools . . ."

For High Wages, Full Employment . . . Business Must Have Better Tools *and More Money to Pay for Them*

So far we have escaped the post-war depression predicted by leading government economists. How can we continue to frustrate gloomy prophets who see only depression ahead?

At the end of World War II the federal Director of Reconversion saw depression immediately ahead. He said we would have 6,000,000 unemployed four months after VJ-Day and 8,000,000 a few months later.

But we did not have depression. We did not because:

First, the American business man, sensing the obligations of a vastly more important post-war America, went ahead to build his plant and equipment to meet expanding domestic and world markets—markets bigger actually and potentially, in terms of world-wide trade and profits than any previously envisaged.

Second, the American businessman was able to get the money to go ahead. Since 1945 he has spent $50 billion building new plants and buying new equipment.

There may be other reasons why we missed a depression in 1946. But—make no mistake about it—what has powered our present prosperity is the $50 billion spent by businessmen since VJ-Day to improve their plants.

It provided jobs directly for 5 million people. It paid for more than half of our record-breaking steel output. It put in place the foundations of great new industries such as television. It strengthened the foundations of the chemical, machinery, plastics, steel and oil industries. It has expanded and improved our power systems throughout the country.

This spending has made the difference between prosperity and slump, between industrial strength and serious deterioration.

In fact, we know now that what business spends for new plants and new tools always makes the difference between prosperity and slump, the difference between national strength and weakness.

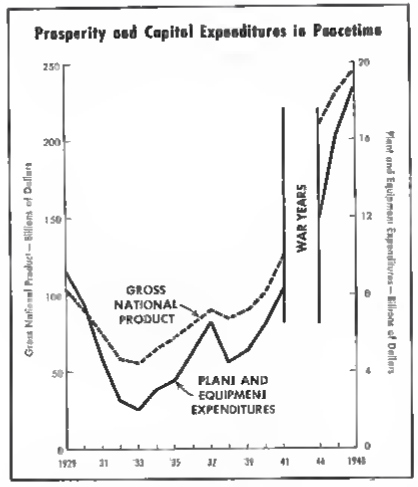
The accompanying chart tells the story. When we have spent heavily for new plants and equipment, we have had prosperity and strength. When we have not, we have been in trouble.

We would have been in trouble since VJ-Day except that business used its war reserves, plus two-thirds of its profits, plus borrowed money to improve and expand its facilities. This year industry is spending $19 billion this way.

Has this great post-war expansion actually made our economy a "mature economy"? Have we come now to the saturation point the New Dealers mistakenly said we had reached in the '30's?

The answer is no!

Proof of that answer is being developed through a McGraw-Hill national survey of "Business' Needs for New Plants and Equipment" details of which will be given in this editorial series in coming months.



We have a bigger nation, more people, to serve right here at home. Further we must meet human needs which the war created around the world. Also, we must sustain a world position such as this country never assumed before.

Here are immediate things crying to be done.

1. Business still needs billions to expand production because our country and our needs are growing rapidly. Example: To meet the demand for power, electric utility companies must nearly double their present generating capacity in 10 years. That will cost more than $7.5 billion. To fill increasing needs for oil and gasoline, oil companies must spend at least as much.

2. Business still needs billions to get its plants up to date and overcome wear and tear. Examples: Over half a million of our freight cars, a third of the total, are more than a quarter of a century old. About two-thirds of the looms in the textile industry are more than 20 years old. Half of our coke ovens, basic equipment for iron and steel production, are more than 20 years old, and only half as efficient as modern ovens.

3. Business still needs many billions to do new things in dramatic new ways. Example: Machinery that will cut out 80% of the dirty, dangerous work of mining soft coal has been perfected. A new automobile engine plant will reduce the work that goes into engine-building by three-quarters.

Hundreds of similar things that our scientists and engineers have developed could be cited. They can be found in every industry. They hold immeasurable promise of adding to the abundance of American living. In fact, there is hardly a step along the whole route of industry—from roughing out raw materials to delivering finished goods—where there are not new and better ways of doing things standing ready for general use.

But the crucial question now is: Where is the money coming from to put to work these new and better ways of doing things?

Business has used its own resources so far . . . profits and reserves. The stock market, where industry traditionally has raised money from people willing to risk their savings, has been limping along, giving business no chance to get enough money on satisfactory terms. *Business now must look primarily to its own earnings for the money to carry out the improvements which are necessary if America is to keep itself strong and efficient.* The next editorial in this series will deal with this new and crucially-important role of profits.

But business can not count on profits alone to do the job. Profits are too uncertain.

From now on finding the money . . . to put new ideas and new equipment to work . . . to go ahead with the expansion and improvement that will thwart depression and build industrial strength . . . *calls for the support of all Americans everywhere.*

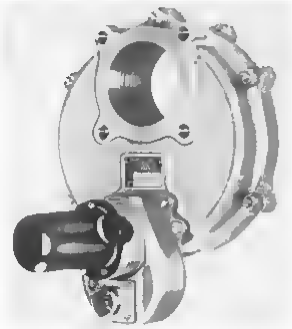
This comes right down to *you . . . for at stake is your chance for steady work, for better pay, for new things like television, and for more of the every-day things, like coal and clothing, of better quality and at less cost.*

By helping business get new and better tools, you will help yourself—and you will help build a more sound, more prosperous, better America.

James H. McGraw, Jr.

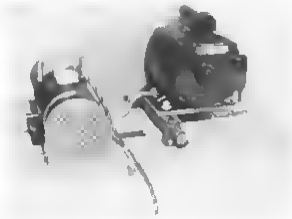
President McGraw-Hill Publishing Company, Inc.

NEW AVIATION PRODUCTS



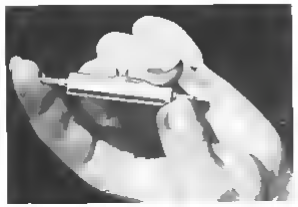
Fuel Shut-off Valve

High capacity and controlled actuation are highlights of new "Shear-Seal" motor-operated, fuel shut-off valve made by **Saval, Inc.**, 1915 East 51st St., Los Angeles 11, Calif. Designed specially for rapid refueling in flight, device is also claimed suitable for single point refueling systems. Unit illustrated, No. 5368, is for 2½-in. tube size. Working pressure is 60 psi., weight is 5 lb. 3 oz. Stainless steel internal parts are housed in cast aluminum body. Valve has straight-through flow passages with no declivities to cause turbulence. Actuator is 22.28v d.c. Rated load current is 1.8 amp. at 24v. Wiring permits use of indicator lights and AN-approved switch is used for limiting. Similar units in series are for 1¼, 1½, 2 and 3½-in. tube sizes. Valves are adaptable for hydraulic, water, oil and hot air as well as aromatic fuel.



Checks Grease Action

New equipment for testing ball-bearing grease under conditions similar to field use is announced by **Special Products Div., General Electric Co.**, Schenectady 5, N. Y. Tester accelerates conditions contributing to destruction of grease to enable material comparison. Tester is small motor-driven unit with two bearings, one for testing and other as guide. Source and flow paths of heat are simulated. Temperatures of bearing outer races are measured by thermocouples. Meter, marked in 1/10 hr., measures time on cyclometer type counter up to period of 1 yr. In operation, bearing loss increases and temperature rises as lubrication becomes less effective. When test bearing overheats so that one thermostat is unable to control it, another thermostat shuts off heater and drive motor, time meter recording total hours of operation.



UHF Noise Diode

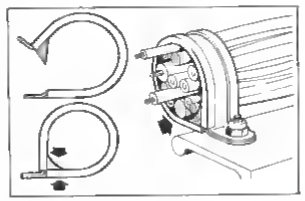
New ultra high frequency diode tube, 1 1 1, used to measure sensitivity of radar receiver and distance over which it can be seen satisfactorily, is offered by **Eclipse-Pioneer Div., Bendix Aviation Corp.**, Teterboro, N. J. Developed by Radio Corp. of America, tube is 3 in. long ⅝ in. in diameter. It supplies electrical noise for determining receiver sensitivity, is reported much simpler than signal generators now in general use, and indicates minimum signal necessary for reception over outside or static noises.

Rotating Shaft Seal

Marketed by **Gits Brothers Mfg. Co.**, 1846 Kilbourn Ave., Chicago, 23, Ill., rotating seal is claimed suitable for water, oil, and fuel pumps, speed reducers, etc. to prevent leakage of liquids or gases along rotating shaft when under pressure or vacuum. Rotating member is integral unit held by compression spring against fixed surface. Operating conditions determine amount of spring pressure necessary to make sealing positive and determine materials used for lapped wearing surfaces and other components. Double units are also available, designed for installations where liquid being sealed cannot act as a lubricant or coolant, and a separate liquid supply is admitted into seal chamber.

Light-Aircraft Oil Filter

New PB5 oil filter made by **Fram Corp.**, Providence 16, R. I., is for use on light aircraft engines not exceeding 335 cu.-in. displacement. Distributed by **Air Associates Inc.**, Teterboro, N. J., device is claimed to shorten engine cleaning time by 5 to 6 hr. at major overhaul. Weight (oil filled to capacity) is 2 lb. 10 oz. Two oil outlets are provided, either being utilizable to facilitate installation and obtain shortest external inlet and return lines. Series of drawings depicting CAA approved installations is available.



Electrical Harness Clamp

To avoid short-circuiting of wires from abrasion, Model TA710 lightweight clamp of .032-in. 24ST is announced by **Thomas Associates**, 46-7 Alger St., Los Angeles 26, Calif. Principal feature is V-wedge of rubber vulcanized to .032-in. rubber cushion, and as clamp is closed, wedge pressure locks to complete rubber grommet. Units are available in 14 sizes from ¼ to 4 in. in increments of ⅛ in.

Plan Studied to Cut Training Costs

Four-place planes would be used to conduct group instruction offering many benefits over normal method.

By Alexander McSurely

Proposal to cut costs of learning to fly and add more interest to cross-country four-place plane flying by a new experimental curriculum for the private pilot is being evaluated by the Ohio aeronautics department.

Main novelty of the new course is its use of the classroom teaching technique, combining three students with one instructor in a four-place personal or business-type plane, and giving the students extensive cross country experience.

C. E. A. Brown, Ohio aeronautics director, and one of the originators of the progressive cross-country curriculum which is gaining wide recognition, is circulating a summary of the proposed course for aviation group comment. If the response is generally favorable, there is a good prospect that a trial course will be conducted.

Course outline includes:

• **Stage 1**—15 hr. for three students and one instructor in four place plane, during which each student receives 5 hr. instruction at controls while the other two students observe from the back seat. Students will be rotated at not more than half-hour intervals, and will make short cross-country trips to strange fields and study fundamentals of take offs, landings, turns, rectangular courses, glide control and stall recognition.

• **Stage 2**—6 hr. for each student in a two place plane during which he reviews fundamentals, power-on approaches, wheel landings, stall recognition, and is soloed.

• **Stage 3**—15 hr. in four place plane under same arrangement as in Stage 1 with emphasis on cross country, navigation, strange airports, etc.

• **Stage 4**—9 hr. in two place aircraft for each student preparation for private license including spin recovery (if still required), stall recognition, approaches, wheel and full stall landings, rectangular courses, solo cross-country, and private pilot examination.

The proposed course includes 45 hr. total flight experience including 30 hr. in a four-place plane, compared to the usual 35 hr., all in a two-place plane. However, it is estimated that on a basis of existing midwest rates, the training per student adds up to 15 hr. of two place training at $10 an hr. and 30 hr. of four place training at $15 an hr.—for a total of $300 for the 45 hr. compared to $350 for 35 hr. of two place plane flight experience.

► **Tried and Proven**—Brown recalls that in the early days of the government sponsored Civilian Pilot Training Program, CAA sandwiched in a cross-country course between secondary and commercial courses which trained students three at a time in a four place plane. Such flight training for advanced students is used by the airlines and the USAF and the Navy for crew indoctrinations, and the method has been found successful. The new curriculum would extend the group training method for the first time, it is believed, to the earliest stage of flight experience.

Besides the obvious advantage of cutting the total cost of a private course, thereby reaching a larger market of aspiring students, the proponents of the new course point out other expected benefits:

• Under the conventional course the student spends much costly time as a listener and observer, while the instructor flies the plane, explains maneuvers or demonstrates student errors. With group training and rotation of students at the controls, each has opportunity to listen, observe and compare without distraction of handling controls at the same time. Meanwhile, he is still experiencing and becoming acclimated to the sensation of flying.

• Each student can compare his work with that of two other pupils of equivalent experience, thereby removing discouragement which often affects pupils in two-place plane flight training as they compare their own first efforts with effortless ease and precision of their flight instructors.

• Competition between students offers a stimulant to student interest.

• Group participation gives each student more confidence, and tends to remove fear.

• Use of private-owner type aircraft in training familiarizes the student with the type of craft he probably will own later if he can afford it, and the cross-country experiences show him the advantages of such ownership.

The Ohio aeronautics director suggests that the course could be merchandised by flight operators on a basis of miles flown rather than on the hours flown.

A curriculum offering 5000 miles of flight in 45 hr. at $300 figures out at the modest rate of 6 cents a mile transportation, a cost comparable to highway travel. When it is added that 3600

COMMANDO CLASSROOM

Fifth grade students at Sunset Elementary School, Weed Patch, Calif., are eager to take aviation studies as an elective course. Reason: the classes in flight theory, navigation, traffic control, etc., are taught in this C-46 Commando, surplus from the Air Transport Command. Plane is parked on the school grounds. George Valos (left foreground) also instructs the students in overhaul and engine repair.

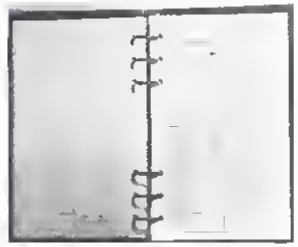
miles of this is in four place postwar family type airplanes this should further add to the course's saleability to persons who might not be interested in the uninteresting purchase of 45 hr. of training maneuvers in a two place plane

►**Pioneering**—To reactions that the course does not meet present requirements for the private pilot certificate Brown replies

"This is not a program that can in the immediate future take the place of the existing primary curriculum. It is rather a challenge to government and industry to prove that the principles outlined are wrong. If they cannot be proved wrong, regulations should be changed so that operators and students may reap the rewards of modern educational methods."

He reports that some operators have commented that the proposed course might meet requirements with a slight change in hours, and if CAA would give part credit for controlled observer time

And he suggests that while the aviation industry is waiting for the development of improved safe, sane and silent personal planes of the future, research in new improved teaching techniques might well make it possible to get greater utility out of the 50,000 or more personal planes now flying. Such research should evaluate controlled observer experience, coordinate training maneuvers and "replace the present private pilot test with modern criteria that would really test the product of our public primary training courses," Brown concludes



IOWA DIRECTORY

Probably the most complete and useful airport directory yet prepared by any state organization is the Iowa Aeronautics Commission's loose-leaf volume, recently distributed free to every registered airman and every fixed base operator in the state. Directory contains a separate page for each Iowa airport, with data including line drawing of field, runway lengths, directions, obstacles, facilities. Photo shows typical page. As revisions are needed or new airports are added, additional pages will be sent out to those receiving the original manuals

BRIEFING FOR DEALERS & DISTRIBUTORS

5001H RYAN NAVION—Ryan Aeronautical Co. delivered its 500th Ryan Navion four place all metal personal plane last month, a year after taking over production of the airplane from North American. Added to previous North American Navion production this makes the 1611th Navion built

Robert Hungerford, pilot for Gillis Flying Service, Billings, Mont., received the plane from Earl Prudden, Ryan vice president, for a flyaway delivery. Meanwhile Ryan also made delivery last month of its first L-17B Navion military utility and liaison plane to the Army Field Forces. Capt. Charles G. George, in charge of the AFF air section, took the plane at San Diego to deliver it at Ft. Monroe, Va., for a special demonstration, after which it was to be taken to Air Materiel Command headquarters, Wright Field, Dayton, for accelerated service testing

Contract calls for delivery of one third of a total of 158 Navions and spares equal to 60 more planes to occupation forces abroad, one third to AFF and one-third to national guard units in this country. The San Diego manufacturer also reported a new high of 74 Navion deliveries in October

PRIVATE PILOT PROFICIENCY—After completion of present flight tests on airline pilot proficiency, CAA researchers hope to conduct pilot proficiency tests on typical private pilots using generally similar techniques adapted to private flying. Ultimate objective is to revise private pilot standards and examinations toward a more realistic and scientific appraisal of pilot capability than the current "rule-of-thumb" method.

AIRPORT REVENUE SOURCES—Break-even point in non-aeronautical concessions at airports to bring in additional revenue will depend largely on the ability of the airport management to furnish attractive merchandising locations in a modern terminal and the size and customer potential of the field, Dr. Leslie A. Bryan, of the University of Illinois Institute of Aeronautics told the New York Airport Managers Conference at Syracuse. However, from 50 to 70 percent of all airport revenue should come from non-aeronautical sources, with special emphasis on restaurant revenues

LIGHTPLANE DEVELOPMENTS—Cessna Aircraft Corp. is doing more work on quiet propellers than anyone else among the personal plane makers. In addition to the four-blade wooden Sensenich shown on a Cessna at the Flying Farmers meeting in Columbus, the company is experimenting with a paddle-bladed McCauley aluminum propeller which may turn out to be the most practical compromise between noise and simplicity of configuration which has yet appeared. . . . Piper Aircraft Corp. has a new arrangement upcoming for the front seats of the four-place Family Cruiser which eliminates the ingenious but somewhat tricky folding of the right front seat, a factor which has bothered some users of the plane this year. The new arrangement makes it possible to slide the seats on a track. . . . Texas Engineering & Manufacturing is experimenting with a tandem trainer version of the all-metal low-wing Swift 125

SELLING EXECUTIVE TRAVEL—A story which nearly every fixed base operator could sell to his local newspaper as a picture feature on the basis of its genuine news interest and local angles, and which would have definite promotional value for his airport operation, is the story of executive air travel by the leading citizens of his community

All he need do is to sit down and figure out the number of local business men who are using his airport facilities, the amount of air travel they do, the places they go, and then call up the local newspaper for a cameraman and reporter for some pictures and interviews with the individuals. One of the best examples of this type story which has come this way recently is the full page picture and story feature in the Oct. 17 Reading (Pa.) Eagle, prepared by the competent aviation reporter, Nick Moser. He rounds up executive travel activities not only from Reading Municipal Airport, but from three other smaller fields in the Reading area—Reading Aviation Service, Inc., Navion distributor, presumably had something to do with the feature since the illustrations show Navions and their owners almost exclusively

—ALEXANDER McSURELY

Stock Analysts Report on Aviation

Two market letters examine earning potentials of both manufacturers and carriers in war and peace.

The aviation industry is receiving increasing attention among investment circles. This is evident by the recent release of separate surveys of the group by two leading investment advisory services. The Value Line published by Arnold Bernhard & Co. of New York reviews the status of the aircraft and airline groups, while Moody's Stock Survey confines its study to the airlines.

The Value Line, in a compact review, analyses the status of the two aviation groups under wartime or peacetime conditions. This is made with the distinct qualification that war is considered improbable next year.

▶**Profits Seen—In** the event of war, Value Line expects the aircraft manufacturing industry will be operating at volume levels. Despite profit restrictions, the aircraft builders are expected to develop substantial earning power. A controlling element is expected to be the excess profits tax imposed on all corporations.

Based on precedents, either invested capital or previous earnings may be used as a base for determination of such excess profits tax. In view of the historical background developed in this respect, most aircraft companies should have a far better basis with which to retain earnings than prevailed during World War II, according to Value Line.

Further, under war-imposed conditions, the aircraft industry would most likely secure top priority in obtaining all necessary materials as well as being assured of adequate labor. Moreover, it is believed that the likelihood of labor strikes would be minimized.

▶**Better Without War**—The Value Line survey concludes that the aircraft industry probably will do much better in retaining net earnings if war is avoided. A high level of expenditures is currently assured for military preparedness without all of the attendant profit restrictions imposed in time of national emergency.

The long-term outlook for most aircraft manufacturers is considered favorable, whether 1949 is a wartime or a peacetime year. The full effect of the 1948 appropriations is expected to be felt next year. Earnings for 1948 are expected to show some improvement over 1947, mainly because development expenses for new model aircraft were written off last year, the manufacturers then having been able to take advantage of their last year of carryback tax credits.

▶**Hope for Carriers**—An optimistic view of the airlines also is taken by Value Line. In the event of war, the pattern of operations for the airlines is anticipated to be the same as prevailed during the last war. As will be recalled, the air carriers remained under private ownership and independent management, but operations were coordinated with the requirements of the military.

Note is made of the fact that the military have recognized that the airlines are essential in maintaining the lines of rapid transportation both from the standpoint of war operations and of assuring a steady production flow of vital armaments.

Considerable benefits are expected to accrue to the airlines should war develop. In the first case, greater traffic flows will be generated, thus assuring capacity passenger, cargo and mail loads on most flights. Modification and training programs may again be undertaken on a fee basis. Moreover, considerable contract operations again may be assumed to supplement military air transport activities, according to this investment survey.

▶**Stimulus**—Value Line asserts that the preparedness program under conditions of peace is bound to be very constructive for the airlines. Considerable industrial activity is created, thus providing a greater stimulus for air travel. Past studies are reported to have demonstrated that emergency business conditions have provided a healthy basis for air traffic. It is the individual with a travel expense account who can be induced more readily to take the relatively higher cost airplane in preference to the train, particularly when time is at a premium.

The conclusion is advanced that some of the air transport companies are gradually getting out of the red. The year 1949 is expected to show an earnings improvement over the generally unfavorable 1948 results.

In addition to the general industry surveys, Value Line also presents detailed analyses with long-term charts, for 14 leading aircraft and airline companies.

▶**Same Answer**—Moody's Stock Survey takes somewhat different approach in reviewing the airlines but comes to virtually the same conclusions as the other analysis.

The opinion is expressed that there are individual companies possessing the finances and operating records to carry through the period of adjustment still ahead of the industry. Matching risks against financial resources, equipment needs, and other factors, sounder airline equities are favored by Moody's at this time. In this group, it lists Eastern, Northwest 4.6 percent preferred, and American common. In addition, American 3½ percent preferred may also be retained, according to the same source.

Moody's brief appraisals of the separate air carriers are interesting and may be summarized as follows:

• **American Airlines**—From a longer term point of view both the common and the preferred stocks have speculative possibilities. Over the foreseeable future, continuation of dividend payments on the preferred appears reasonably safe.

• **Braniff Airways**—Growth possibilities depend largely on the management's ability to expand foreign business, an unpredictable factor, in a highly competitive field. Stock is very speculative.

• **Capital Airlines**—The present management has made some progress in bringing operations back on a profitable basis. But a $4 million bank loan, which is being extended only months at a time, and a $9.85 million income debenture, on which sinking fund is in default, place the common in a highly speculative position.

• **Eastern Air Lines**—The stock represents the soundest equity in the air transportation group and holds the least speculative risk.

• **National Airlines**—The value of tangible assets approximates current market price for the stock which is highly speculative.

• **Northwest Airlines**—The common has little appeal. But commitments in the preferred, though highly speculative, should work out well over the longer term.

TWA—Under a new management, much progress has been made in reducing operating costs but debt is large and additional financing may be difficult except through the issuance of common stock.

United Air Lines—The lack of modern, fast two-engine equipment may prove a competitive disadvantage to the company and result in relatively higher costs.

Ed. Note: The opinions reviewed here are those of two investment advisory services and not necessarily those of this writer. Neither the writer nor AVIATION WEEK *stands sponsor to or endorses the investment opinions indicated above.*

—Selig Altschul

Baker → Landis ← Behncke

Mediation Ends National Strike

Former CAB Chairman Landis umpires secret three-week negotiations between company and pilots' union.

The longest and most costly strike in the history of American air transportation has been settled by National Airlines and the Air Line Pilots Association.

An agreement ending the 10-month-old walkout was reached on Nov. 24 after more than three weeks of secret negotiations between the company and the pilot's union in New York and Washington.

James M. Landis, former CAB chairman, now a Colonial Airlines director, acted as mediator and announced that the striking pilots will return to work as promptly as safety requirements permit.

▶**Check-Outs Speeded**—Picket lines established by ALPA at principal NAL stops soon after the strike began last Feb. 3 have been dissolved. With check-outs being expedited by both company and union, ALPA crews probably will be manning most NAL planes within a month.

The dispute which caused the strike—discharge of ALPA pilot Maston G. O'Neal by National—is to be submitted to arbitration under supervision of the National Mediation Board. O'Neal was dismissed after a landing accident which occurred at Tampa, Fla., in September, 1945.

In general, the strike settlement provides for a return to working conditions which prevailed before the walkout began. National and ALPA expressed belief that the agreement contained provisions for breaking future deadlocks in grievance cases, thus preventing strike action.

▶**Suits Withdrawn**—Pending litigation between National and the pilots is to be dismissed, and all claims by both sides, including requests for wages during the strike, will be relinquished. During the first month of the walkout, NAL filed a $5,000,000 damage suit against ALPA for libel and slander. Later, ALPA sued National for $1,000,000 damages for financial losses suffered as a result of alleged noncompliance by the company with federal laws.

About 110 non-union pilots who flew National Airlines planes during the strike faced loss of employment as a result of the settlement. They have announced formation of a new organization, the National Pilots Association, and have invited all commercial pilots to join.

National Airlines President G. T. Baker repeatedly assured pilots hired during the strike that they were "permanent employes." In announcing the settlement, the carrier said provision for the benefit of the non-ALPA pilots will be made.

▶**Seniority Provisions**—But since returning ALPA crewmen will be given their former seniority standings, the non-union pilots will for the most part be at the bottom of the employment ladder—ranking below ALPA members who were on furlough when the strike began. A few ALPA pilots remained with National throughout the entire duration of the strike.

The NAL-ALPA settlement provides that even if all striking pilots have not been returned to flying duty by Jan. 24 they will be restored automatically to base pay status on that date. Non-union pilots hired by National during the strike will not be used to requalify ALPA members returning to work. Instead, active check pilots of other certificated airlines will be employed for this purpose.

▶**NAL Losses High**—Repercussions of the strike will be felt by both National and ALPA for a long time. Largely because of the walkout, NAL's operating revenues during the first nine months of 1948 were $2,647,000 below the same period last year.

The carrier had a $1,929,164 net loss during the first three quarters of 1948, compared to a $598,149 deficit in the same 1947 period. Whereas the company's balance sheet showed $217,290 in earned surplus last Jan. 1, its records showed a deficit of $1,711,874 nine months later.

ALPA also has felt the strain of the extended walkout. The union's working membership has borne extra assessments to support the 130 NAL pilots on strike. Even so, the striking crewmen received considerably less than their normal pay from union benefits. Additional legal fees and maintenance of ground and aerial picketing further contributed to the union's expense incurred during the walkout.

▶**Best Traffic Season Ahead**—On the brighter side, termination of the strike just before the holidays enables National to take full advantage of the peak Florida vacation traffic this winter. And five days after the walkout ended, CAB again acted to raise the carrier's temporary mail pay.

Last March over ALPA protests, the Board boosted National's mail compensation by about $440,000 for the period July 14, 1947, to Dec. 31, 1947. It more than tripled the rates effective during 1948 and more than doubled the rate effective after Jan. 1, 1949.

▶**More Mail Pay Offered**—The latest adjustment would increase National's mail pay for the period between July 14, 1947, and June 30, 1948, from $789,000 to $1,022,000. For the last six months of 1948, National would receive 17 cents a plane mile mail pay instead of 10.5 cents, and starting Jan. 1, 1949, it would get 17 cents instead of 7.5 cents.

Under the new temporary rate, National would get systemwide mail pay aggregating about $1,440,000 annually. But the latest adjustment is still insufficient to compensate NAL for the abnormal losses suffered during the strike. CAB will determine whether the strike losses should be canceled out by mail pay in an upcoming and final mail rate study.

▶**Dismemberment Inquiry**—Despite settlement of the walkout, CAB last week held a prehearing conference on its investigation to determine whether transfer of National's routes to Pan American Airways, Delta Air Lines, Eastern Air Lines and another appropriate carrier would be in the public interest.

Hearing in the case has been postponed to Jan 24

During the prehearing conference, National and Delta attorneys said the two carriers are still negotiating with a view to possible merger But, they added, the Board's dismemberment investigation is hampering the talks

World Coach Plan Tabled by IATA

Despite rising costs international scheduled airlines have agreed to stick to present passenger and cargo rates until next October

It is probable they will introduce new tourist class rates by then—skycoach service on a worldwide scale

Decision to hold the line was made at the recent annual conference in Bermuda of the International Air Transport Association

The IATA meetings stressed lower rates The reason was summed up by Willis G Lipscomb, chairman of the joint traffic conferences 'The public demand for a cheaper mode of air transportation in addition to the present standard of service cannot be ignored."

► **Hildred Statement**—This view was strengthened by the statement of Sir William Hildred, that, "international air travel should be the vehicle of the factory hand's holiday'

An important measure passed at the conference was standardization of sleeper rates at $50 across the North Atlantic and $45 across the South Atlantic Sleeper rates have varied anywhere from $25 to $125

No action was taken on air cargo rates, Lipscomb said, although "the rates as they now stand are not designed to attract customers

► **More Study Needed**—While many of the airlines represented at the conference wanted to adopt tourist fare now to take advantage of next summer's trade, the motion was stopped by some who felt that further study of the matter was necessary before making any definite commitments There is also a desire to observe results of off season excursion rates which from now until April provide for a 25 percent discount on round trips not exceeding 30 days

A committee representing Conferences One and Two (all countries except Asia Australia, New Zealand and Pacific Islands) will meet in Brussels Jan 1 to work up a proposal on tourist rates which can be submitted at the next joint conference, Apr 1 The committee also will consider the subject of reductions in cargo rates

► **European Economy**—Leon Schoevaerts, vice chairman of the IATA traffic committee, stressed that introduction of tourist rates would not only benefit the airlines and passengers but would also have a considerable effect on Europe's economy

"Prior to this," said Schoevaerts, 'the airlines have carried business men and wealthy vacationers to Europe In most cases, they spend several months there Planes returning to America come back with much lighter loads We lose money because our rush season with these people is only at the beginning of the summer and in the early fall when they return

"Tourist rates would encourage the two-to-three-week vacationers who would be going and coming over a four to five-month period, constantly giving the airlines full passenger loads both ways"

Schoevaerts pointed out that large numbers of these vacationers would "distribute their money more evenly throughout Europe than do the few wealthy vacationers that go there now"

He expressed regret that because of resistance to passage of the tourist fare at this time, the international airlines would not have a full scale skycoach operation until 1950

Capital Airlines is convinced passengers want skycoach service after seeing jam ups such as this crowd waiting for one of the four planes that ran from LaGuardia Nov 29

Public Takes to Skycoach Service

Experimental skycoach services inaugurated this fall by Pan American Airways and Capital Airlines (PCA) are continuing to pay off in a big way

Enthusiastic public reception of its low cost air transportation has caused Pan American to add another daily flight in each direction between New York and San Juan, Puerto Rico, on Fridays, Saturdays and Sundays And Capital late last month began running extra sections on its coach service between New York, Pittsburgh and Chicago to handle the traffic overflow

► **PAA Loads Heavy**—Since starting its daily tourist class service to Puerto Rico with special 63-passenger DC-4s last Sept 24, PAA has had the flights booked almost solidly in advance The one way fare of $75 compares with the $133 first class tariff

During the first 47 days of coach service, PAA had 5922 seats available on all flights—2961 northbound and 2961 southbound Of these 2785 were sold on northbound flights an average of 59 5 per trip making a 94 percent load factor Southbound, 2038 seats were sold, an average of 43 per flight, giving a 68 8 percent southbound load factor

► **PCA Makes Profit**—Meanwhile, Capital, which estimated it could break even with a 50 percent load factor on its low-fare "Night Hawk" run between New York and Chicago, is averaging 65 percent On Nov 25, Capital was forced to provide two extra sections eastbound and two westbound On Nov 29 it had to put on three extra sections—four planes each way

Between Nov 18 and Nov 27, none of Capital's eastbound coach flights carried less than 25 passengers on the through haul from Chicago to New York In addition substantial amounts of traffic moved on the Chicago to Pittsburgh and Pittsburgh to New York segments

Westbound between Nov 18 and Nov 27, the smallest through load to Chicago was 22 passengers And on that occasion nine passengers made the New York to Pittsburgh trip and six rode from Pittsburgh to Chicago

As of last week, Capital had 550 Night Hawk bookings up to Jan 1

C&S Would Abandon Service to 3 Cities

Taking an unprecedented step to eliminate "uneconomic, wasteful and unnecessary competition," Chicago and Southern Air Lines has sought permission to abandon service to three Illinois cities.

The communities — Bloomington, Springfield and Peoria—were placed on C&S Route 8 by the Civil Aeronautics Board in a "grandfather" certificate award in 1939. But now, Chicago & Southern declares, other transportation facilities between these cities adequately serve the needs of commerce, the Post Office and national defense.

▶**Power Defined**—Chicago & Southern's request takes on added significance in view of CAB's recent policy statements. Last fall (AVIATION WEEK, Sept. 27), the Board went out of its way to make clear that the Civil Aeronautics Act gives it power to eliminate a point from a certificate if required by the public interest. CAB in the past has suspended service at domestic points for economic reasons, but has not authorized outright abandonment.

Peoria is currently receiving service from C&S. Service to Springfield was rendered by the carrier until October, 1940, when it was suspended due to inadequate airport facilities. Although the field has been improved since the end of the war, Chicago & Southern has not reinaugurated service to Springfield due to economic considerations. Service to Bloomington has never been started by C&S because that city's airport facilities have not been adequate for the type of planes operated by the carrier.

▶**Low Traffic Potential**—In its request for abandonment, Chicago and Southern told CAB that neither present traffic nor reasonably foreseeable traffic potential is sufficient to justify or support continuation of the company's existing service to Peoria or inauguration of C&S service to Bloomington or Springfield. The carrier said inauguration of service to Bloomington and Springfield would increase its dependence on government mail subsidy, while abandonment of service to the three cities would "serve to improve the economic stability of the C&S system."

Peoria receives service from American Airlines and TWA besides that offered by Chicago & Southern. In addition, it is slated for service from Parks Air Lines, a feeder not yet activated.

Springfield is being served by American and is also a point on the Parks network. Parks has been designated to stop at Bloomington.

▶**Opposition Expected**—Bitter civic opposition to Chicago & Southern's proposal is in prospect. The carrier must also obtain permission from the Illinois Commerce Commission to abandon its service. And CAB has rejected other opportunities to cut down mail subsidies.

Last September, the Board ordered Colonial Airlines to start service to Poughkeepsie, N. Y., despite the carrier's statement that the point would not be self-supporting and already had excellent surface transportation. Colonial pointed out that the prospective annual loss of around $32,000 at Poughkeepsie would have to be made up through additional mail pay subsidy.

Early in 1947, CAB instituted investigations of both Chicago & Southern and Colonial to determine whether their increased dependence on mail pay subsidies was due in part to uneconomic characteristics of their domestic route patterns. The Board also was interested in finding whether operations not yet inaugurated should be postponed indefinitely or suspended for a period of time. But the probes have brought few results to date.

British Discloses Losses

Continued utilization of uneconomical aircraft and high operating costs are keeping Great Britain's three state-owned airlines far in the red.

A government white paper has disclosed that British Overseas Airways Corp., British European Airways and British South American Airways lost a total of about $44,500,000 during the year ended Mar. 31, against almost $41,000,000 in the previous 12 months.

BOAC's deficit dropped from around $32,380,000 in the year ended Mar. 31, 1947, to about $28,430,000 last year. But BEA's loss rose from about $8,640,000 to $14,330,000, while BSAA's $82,000 profit for the year ended Mar. 31, 1947, became a $1,690,000 deficit last year.

The British Ministry of Civil Aviation said that despite reorganizations being carried out by BOAC and BEA to effect economies, losses this year will also be substantial.

Cruzeiro Gets Permit

Issuance of a foreign air carrier permit authorizing Servicos Aereos Cruzeiro do Sul to operate between Rio de Janeiro, Brazil, and New York via Belem, Port of Spain, San Juan and Ciudad Trujillo has been recommended by CAB Examiner R. Vernon Radcliffe.

Cruzeiro was designated by the Brazilian government to conduct the service in accordance with that country's bilateral air transport agreement with the U. S. The Brazilian operator plans to inaugurate regular flights to the U. S. with DC-4s, two of which now are owned.

CAA Charges Overload In Alaska Nonsked Crash

Columbia Air Cargo, nonscheduled carrier active on the Pacific Northwest-Alaska run for the last two years, has ceased operations following a complaint by the regional CAA administrator at Anchorage, who asked suspension of the company's operating certificate.

The complaint charged that Columbia's DC-3 cargo plane which crashed on takeoff from Merrill Field, Anchorage, Oct. 19, was overloaded by 2000 lb. It alleged that the company had given untrue weights on its cargo manifests and had operated from fields when weather was not suitable.

In announcing that his company had made its last flight, Joe Dobbins, Columbia president, asserted that CAA had joined with the scheduled airlines to drive all nonskeds out of business. "What's the use?" he asked. "The cards are stacked against you. CAA is policeman, judge and jury."

Dobbins denied that the load had anything to do with the Anchorage accident. He said CAA regulations permitted him to carry 6700 lb. of freight if no passengers were aboard. "We had only 5800 lb. aboard," he said, "but we had one unexpected pas-

senger. CAA regulations provided that only 4900 lb. could be carried when any passengers were being carried abroad the plane.

New Pact for TAL

Transocean Air Lines, Oakland, Calif., the nation's largest overseas contract carrier, has made arrangements to fly 600 Filipinos from Manila to Guam, where they will work on defense projects.

The new pact is an expansion of a contract with the U. S. Army Engineers, under which TAL has been carrying workers and cargo between California and Guam for more than a year. Completion of the Guam-Manila operation will require ten DC-4 trips. California-Guam flights now average two trips weekly.

Transocean is still engaged in transportation of displaced persons from Munich, Germany, to Caracas, Venezuela, under a contract with the International Refugee Organization, a United Nations adjunct. A month ago (AVIATION WEEK, Nov. 1), TAL signed a $1,000,000 pact to establish international air services for Pak-Air, Ltd., Pakistan.

PAA INNOVATION

Pan American Airways is introducing a "cocktail hour" and wine with meals on its Miami-Puerto Rico and New York-Rio de Janeiro routes. The wine is included in the regular Clipper meal service at no extra charge. Passengers who do not care for wine may take the unopened four-ounce bottles home as a souvenir of their flight. During the cocktail hour, passengers have their choice of Scotch or bourbon highballs, Martinis or Manhattan cocktails, or rum with coke or soda. Later the PAA liquor service will be extended to the company's routes throughout South and Central America and the Caribbean.

More Mail Pay For Fiscal 1949

The Post Office Department will allot about $14,913,347 more mail pay for the air transport industry in fiscal 1949 (ending June 30, 1949) than it did last year.

The Department reports that:

- Payments to all certificated air carriers will total around $89,390,814 this fiscal year, compared with $74,477,467 for the 1948 fiscal year.
- Domestic payments will total $45,591,481—an increase of $6,943,590 over the 1948 fiscal year ($38,647,891).
- Foreign payments will total $43,799,333—an increase of $7,969,757 over the 1948 fiscal year ($35,829,576).

Pan American Airways is due for the lion's share of this year's mail payments: $24,823,872 (of which $14,205,672 is for services over the Los Angeles/San Francisco-Hawaii-Asia Route). This is almost double the $12,528,187 earmarked for TWA.

Other carriers slated for big payments: American Airlines, $9,476,998 (including payments to American Overseas), Northwest Airlines, $6,436,449, United Air Lines, $5,945,075 and Eastern Air Lines, $3,005,664.

▶ **Estimate For 1950**—The Post Office estimates that 1950 fiscal year foreign air mail payments will continue at the 1949 fiscal year level but is counting on a slight over-all drop ($382,171) in domestic payments. Both developments, of course, are subject to change by Civil Aeronautics Board rate decisions or unanticipated increases or decreases in mail volume.

This is the Department's projected picture on 1950 fiscal year domestic mail payments, on which it is basing budget estimates:

- Payments to the "big five" will increase slightly from $21,177,884 this fiscal year to $21,905,986—the $728,102 hike being divided about equally among the carriers. These lines—United, TWA, Northwest, American and Eastern—received $15,738,948 for domestic services in the 1948 fiscal year.
- Payments to two carriers operating on a ton-mile minimum-capacity rate—Capital Airlines and National Airlines—will fall off. Capital's mail pay will drop from $1,676,238 this year to $1,117,229 and National's, from $554,914 to $462,429. Payment to the third carrier operating on this formula, Western Air Lines, will be the same as this year ($479,464).
- Payments to four feederlines will decline: Monarch Air Lines from $655,311 this year to $599,193; West Coast Air Lines from $431,868 this year to $390,097; Trans-Texas Airways from $696,458 to $502,098 and Piedmont Aviation from $699,710 to $493,224.
- Payments to all other carriers will continue at the current fiscal year level.

Following are the current (1949) fiscal year mail allotments which will be made to carriers, with last year's payments shown in parentheses:

Pan American, $24,823,872 ($21,332,452): San Francisco/Los Angeles-Hawaii-Asia $14,205,672 ($13,649,540); New York-Europe-Asia $6,832,800 ($4,587,805); New York/Miami/Houston-South America, $2,546,400 ($2,097,310); Intra Alaska, $1,235,000.

TWA, $12,528,187 ($9,226,851): Foreign $6,570,030 ($4,651,254); domestic $5,958,157 ($4,575,597).

American, $9,476,998 ($8,348,262): American Overseas $4,591,838 ($3,088,857); domestic $4,885,150 ($5,235,405).

Northwest, $6,436,449 ($5,751,425): Foreign, $4,695,198 ($4,370,535); domestic $1,740,252 ($1,380,890).

United, $5,945,075 ($4,474,232): Foreign, $311,117 ($211,722); domestic $5,632,958 ($4,262,570).

Eastern, $3,005,664 ($2,171,776): Foreign $51,918 ($30,000); domestic $2,953,726.

Panagra, $1,104,326 ($1,054,380).

Braniff, $2,924,735 ($1,729,826): Foreign $1,104,390 ($56,062); domestic $1,820,145 ($1,663,764).

Chicago & Southern, $2,522,066 ($1,558,509): Foreign $1,070,194 ($400,733); domestic, $1,451,872 ($1,127,776).

Colonial, $1,158,027 ($1,128,621): Foreign $137,333 ($405,150); domestic $557,634 ($324,501).

National, $611,914 ($798,797): Foreign $57,000 ($46,350); domestic, $554,914 ($752,447).

Western, $479,464 ($686,475). **Capital**, $1,676,238 ($2,933,708). **Hawaiian**, $26,292 ($22,387). **Continental**, $1,113,844 ($1,287,067). **Caribbean-Atlantic**, $143,111 ($148,261).

Pioneer, $1,216,437 ($1,128,335). **Southwest**, $873,832 ($1,642,724). **Delta**, $2,082,103 ($1,852,821). **Mid-Continent**, $1,555,155 ($1,313,510). **Inland**, $575,282 ($578,586). **All American**, $544,755 ($552,132). **Los Angeles Airways**, $281,490 ($226,040). **Northeast**, $867,008 ($682,753).

Monarch, $655,311 ($855,023). **Challenger**, $710,743 ($703,410). **Florida Airways**, $667,732 ($607,530). **West Coast**, $431,858 ($551,148). **Empire**, $865,761 ($737,047). **Trans-Texas**, $677,468 ($793,213). **Wisconsin Central**, $624,056 ($567,324). **Piedmont**, $699,710 ($278,724).

In addition, payments will be made for Alaskan services this year as follows: **Cordova Air Service**, $10,885. **Northern Consolidated**, $220,098. **Alaska Airlines**, $275,353. **Pacific Northern**, $235,548. **Ellis**, $81,493. **Alaska Coastal**, $112,381. **Wien Alaska**, $53,852. **Reeve**, $87,286. Pan American's payment this year of $1,235,000 for intra-Alaskan service will top that of any of the local lines.

Payments to foreign air carriers this year will total $1,270,767 as follows: **Peruvian International**, $78,555. **Sabena**, $43,500. **Scanair** (Scandinavian Airlines System), $240,488. **Swissair**, $1,000. **KLM**, $180,425. **Bour**, $672,000. **China National Aviation**, $15,806. Last year only two foreign carriers received funds for carrying U. S. Mail: Peruvian, $59,530 and Scanair, $25,446.

Air Mail Post Cards

New 4-cent airmail post cards will be available at post offices throughout the country starting Jan. 11 or as soon thereafter as distribution permits.

Authorized by the last Congress, the airmail post cards will be cream colored and of standard size, with the stamp printed in red. Central design on the stamp consists of an eagle in flight with outstretched wings on a light background.

SHORTLINES

▶ **Capital**—Reports $168,349 operating profit and $21,288 net profit during the quarter ended Sept 30 against $131,874 operating profit and $75,710 net loss in the same 1947 period Cash funds on Sept. 30 aggregated $3,759,000, up $815,000 over the same date last year Operating revenue for third quarter 1948 was $5,931,502, a $604,000 gain over the same 1947 period

▶ **Civil Aeronautics Board**—Albert F Grisard, formerly a Board public counsel, has become confidential assistant to Oswald Ryan, CAB vice chairman

▶ **Delta**—Reports $137,359 net profit during the September quarter.

▶ **Eastern**—Had $762,578 net profit in the first nine months of 1948 against $409,809 in the same period last year

▶ **Florida airways**—CAB has denied the feeder's petition for reconsideration of the decision last September in which temporary certificate was not extended beyond Mar 28, 1949

▶ **National**—A CAB examiner has recommended that NAL's Havana-Miami/Tampa certificate be amended to authorize nonstop flights between any point on this link and any point on route 31 (New York Miami)

▶ **Northeast**—Alfred A. Lane has become operations manager

▶ **Pioneer**—Flew a record 10,131 passengers in October In the first 10 months of this year, the feeder carried 76,541 passengers against 51,111 for the same 1947 period Company expects to show over $100,000 profit this year against $54,000 in 1947

▶ **Scandinavian Airlines System**—Has signed an interline traffic agreement with Willis Air Service, noncertificated cargo line

▶ **Transocean**—Has been authorized by the Venezuelan government to start regular DC-4 service between Caracas and Rome via Bermuda and the Azores. TAL has for some time been engaged in transportation of displaced persons from Munich, Germany, to Venezuela under a contract with the International Refugee Organization and already has personnel stationed in the South American country . . . All officers and directors were reelected at the carrier's recent annual meeting.

▶ **United**—Has flown its 500 millionth mile since inauguration of service Apr 6, 1926, by Varney Air Lines, UAL's first predecessor company . . . Recently-completed poll shows that pleasure travelers constitute two-thirds of the passengers on United's route between the West Coast and Hawaii . . . Company has increased its cargo capacity between New York and Chicago by 13 percent, between Chicago and Cleveland by 16 percent, and is operating new cargo service into New England

Rheinstrom Dissolves Firm

Alvin P Adams and Associates, Los Angeles and Washington, D C, aviation consulting firm, has acquired the interests of Charles A Rheinstrom, Inc, New York City Charles A Rheinstrom, who resigned as vice president of American Airlines several years ago to enter the consultant field, will dissolve his company to become senior vice president of Erwin Wasey & Co, New York advertising agency (AVIATION WEEK, Nov 29)

CAB SCHEDULE

Dec 6—Hearing on TWA's complaint against Pan American Airways Saudi Arabian service. (Docket 3254)

Dec 6—Oral argument in California-Nevada service case (Docket 2019 et al.)

Dec. 13—Hearing on Pan American Airways Guatemala City-Los Angeles San Francisco route case. Postponed from Dec 8 (Docket 3277)

Jan 3—Hearing in New England states service case (Docket 2194 et al.)

Jan 4—Hearing in TWA route consolidation case (Docket 2581 et al)

Jan 10—Oral argument in Continental Air Lines route consolidation case. (Docket 576 et al and 3180)

Jan. 10—Hearing on TWA's complaint against Seaboard & Western Airlines (Docket 3346)

Jan 18—Hearing on Board's investigation of through service and interchange requirements at St. Louis and Memphis (Docket 3425)

Jan 17—Hearing on Board's investigation of National Airlines route transfer (Docket 3500)

Jan 24—Hearing on Board's enforcement proceeding against Transocean Air Lines (Docket 3244)

Jan 25—Hearing on Western Air Lines-Arizona Airways San Diego-Yuma route transfer (Docket 3444)

Jan 31—Hearing on additional service to Puerto Rico (Docket 2123 et al.)

Jan 31—Hearing on Board's enforcement action against Nats Air Transportation Service. (Docket 3456)

Feb 2—Hearing on Florida Trunkline service Postponed from Jan 10 (Docket 2215 et al)

Feb 16—Hearing in reopened Mississippi Valley and southeastern states cases. (Dockets 548 and 501 et al)

Mar 7—Hearing in southern transcontinental route case (Docket 1102 et al)

LETTERS

"Persuading Millions to Fly"

Thanks for your editorial Nov 15 (Persuading Millions to Fly) It might be interesting to you to know who started the whole idea of these "flightseeing" trips in this era Karl Dahlem, our Regional Director of Public Relations in Boston It was so successful that we immediately expanded it throughout the system

REX SMITH Vice President
American Airlines System
New York, N Y

I read with great interest your editorial . . . We have been so impressed with our success in reaching large numbers of people who would otherwise not be exposed to air transportation that it is particularly gratifying to see the project carry your enthusiasm Regarding your final paragraph—watch us next spring, then you will see an Airport Open House Program done with a professional touch

WALTER H JOHNSON, JR Regional V P
American Airlines, Inc
New York, N Y

It is my pleasure to be able to echo the sentiments of your editorials, "Persuading Millions to Fly" . . . I feel that publicly owned and operated airports as well as the airlines and other segments of the industry, have a stake in educating the public to a greater acceptance of aviation

It may take some time to achieve, but I feel that if aviation is properly presented, the public can be induced to absorb and accept it without the necessity of a high pressure selling job which might have bad after effects

ROBERT M HOWARD, Manager
Theodore Francis Green Airport
Hillsgrove, R I

Your recent editorial series . . . is timely As soon as all of our airlines and aviation businesses realize the importance of air age education I am sure many of their complaints about business conditions will disappear I have found that many of the aviation people had to be sold on such a program before they would even cooperate with us in our state-wide air age education program . . . Let's do some more stimulating and if necessary take a page from the railroads' book to do it

HAROLD D WEATHERLY,
Aviation Education Consultant
Mo. Division of Resources & Development
Jefferson City, Mo

Your editorial is right along the line of our own experience with the Atlas Sky Merchant, containing the "flying showcase"

As you know, we had it at the Cleveland Air Races and some 25,000 people went through it Subsequently, at Bedford, Mass, we had 18,000 people over the week-end, including Air Force Day . . . There is a great reservoir of potential users to be sold on air transportation

It is my observation that a lot of the executives of corporations and old timers in aviation have walked out on the airlines because the schedules have been so snarled up as to be useless on short runs.

For example, we used to have on-the-hour, every hour, service from Newark to Washington Take a look at the schedule now . . . You can go by train that way, but you could do that long before aviation I think just that example shows we have been slipping

Going to Dayton is another example The typical trip to Dayton, unless you change your program to accommodate the airlines, is over five or six hours of stopping at half a dozen places I, for example, am going to Dayton today—because I am tied up until after lunch—by way of American to Washington and TWA to Dayton If I had not known something about the schedules, I would not have stumbled on this solution

EDWIN E. ALDRIN
Atlas Supply Co
Newark, N J

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EX-A F Eng test pilot desires position as pilot or co-pilot with non-sched or private concern, 1200 hrs. total time (accident free) in four, twin and single eng. craft PW-7280 Aviation Week.

(Continued on page 50)

(Continued from page 49)

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Wanted—Will give $8000.00 cash and up depending upon condition for flyable DC-3's or C-47's. Need not be licensed. Box 2720 Winston Salem, N. C.

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STRICTLY PERSONAL

Not in the Family Way—Reservations people at American Airlines have run into some funny situations since the Family Fare Plan started. **Karl Dahlem** writes from AA's Boston office that they have the best one.

Agent **Marilyn Walsh** started explaining the fare saving plan the other day to a potential passenger but was interrupted with some fervor by the voice at the other end of the line. "Family Plan, hell! I want a reservation to Reno and I want it right away, alone."

Abortive Press Release—A 17-year old girl gave birth to a baby aboard a western feeder line plane the other day. The public relations department decided this was one of those "firsts" to tell the papers about, and began collecting the usual interesting data. But the papers never heard about it. The lady wasn't married.

Nesbitt's Homely Philosophy—That energetic president of Atlantic Aviation Corp., **Sydney Nesbitt**, writes in from Teterboro that "There is nothing wrong with the personal airplane business that a good, twin-engine, 6-place, all weather equipped airplane, selling for $25,000, wouldn't cure."

Sadie Isn't Surprised—**Hy Sheridan** says the Saturday Evening Post has changed the name of his next article Dec. 18 from "The Zero Reader" to "Aviation's Incredible Dingus." Hy says "Sadie the Stewardess knows me so well, she says she wasn't a bit surprised the editors changed the title."

So Solly Please—Chicago & Southern's chief pilot on the southern division is **H. L. Jack McKee**. Besides being a DC-4 wheeler, he flies his Luscombe Silvaire every day, rain or shine, between his farm and New Orleans airport, 55 miles apart.

Now, **Larry Keil**, C&S public relations supervisor, says that Silvaire is no ordinary ship. More than one smart and happy pilot has settled back behind the controls and gone daffy. Because McKee has the entire instrument panel equipped with Japanese instruments.

Jack picked up the gadgets while in the service and found on his return that they'd work in a lightplane. So he installed them as a gag, calculated where the readings would be for take-off, normal flight, and landing, and then set out very successfully to dumbfound his pilot cronies. (We'll bet he hears from CAA about this.)

Hail Mr. Piasecki—**Bud Huber** says shortly after he joined Piasecki Helicopter Corp. as public relations chief he attended a company "social." One character had been wearing himself out making trips to the spigot of free beer. With each mugful he'd sing the praises of Piasecki.

PICTURE OF THE WEEK

James Strebig, Associated Press aviation editor, relaxes during a recent sojourn at Tijuana between visits to important aviation news centers on the West Coast.

"Praise be to Allah for Mr. Piasecki, a great man, the salt of the earth . . ."

Without knowing it, the character (not an employe) was attracting Piasecki's rapt attention, so Bud and Harry Pack egged the stranger on, and Piasecki beamed.

Finally PHC's president turned to Bud and half-jokingly said, "You ought to lure this man to help you. Good advance agent."

Without a moment's pause, Pack shot back, "Why, Bud did lure him."

Now Huber wails, "And to this day I'm convinced Piasecki won't believe I had never seen that character before in my life." (We'll bet Pack had, though.)

Bits About People—**James G. Ray**, formerly Southwest Airways vice president, has opened an aviation consultant's office at 1025 Vermont Ave., Washington, D. C. . . . If you know any jokes about Crosley cars, **Emmett McCabe** has probably heard them. He's a proud, new owner out at Convair where he is public relations chief. **Paul Andrews** has established Andrews-Wilson Advertising Corp. in the Commerce Bldg., in Beverly Hills, Calif., and will handle general accounts, with particular emphasis on aviation. — **Scott Hersbey** at Air Transport Association verifies the report that Universal Pictures has deferred that controversial movie, "Air Crash."

R. H. W.

WHAT'S NEW

New Books

"Aeronautical Training," a "quiz system" covering navigation, meteorology, aircraft, aircraft engines, and air commerce regulations, by Charles A. Zweng, LL.B. Revised edition, paper-covered, illustrated, printed by lithography. Published by Pan American Navigation Service, 12021 Ventura Blvd., North Hollywood, Calif. Price $3.

"Flight Engineers Manual," by Charles A. Zweng, first published September, 1947. Paper-covered, illustrated, printed in lithography. Published by Pan American Navigation Service, 12021 Ventura Blvd., North Hollywood, Calif. Price $5.

"Gas Tables," a reference book by Professors Joseph H. Keenan and Joseph Kaye of MIT, replacing the earlier volume by the same authors entitled "Thermodynamic Properties of Air." Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. Price $5.

"Falks Graphical Solutions to 100,000 Practical Problems," a 400-page handbook with graphic solutions for complex and simple mathematical problems, by Karl H. Falk, IAS, SAE. Available from Columbia Graphs, Columbia, Conn. Price $6.

Trade Literature

"Zinc Die Castings in Ever Widening Fields," a 63-page booklet available from New Jersey Zinc Co., 160 Front St., New York 7, N. Y., upon request.

"Wheelco Thermocouple Manual," a 40-page bulletin of data for thermocouple users. Available upon request from Wheelco Instruments Co., 847 W. Harrison St., Chicago 7, Ill.

"Jagabi Lubri-tact Tubular Rheostats," a bulletin describing various styles of standard, screw-drive, double, graded, switchboard and other rheostats. Bulletin 41-63 is available upon request to James G. Biddle Co., 1316 Arch St., Philadelphia 7, Pa.

"Large Airport Lighting and Distribution," a 50-page booklet with detailed lighting plans and section on all-weather approach lighting system, available upon request to Westinghouse Electric Corp., P. O. Box 868, Pittsburgh, Pa.

"Technical Data Book," a 28-page catalogue on phosphor bronze, available upon request to The Phosphor Bronze Corp., 2200 Washington Ave., Philadelphia 46, Pa.

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EDITORIAL

A Break in the Overcast

The economic weather in air transport has been dreary. It still is. Visibility has been zero-zero. Vision and faith in the future are scarce. But here and there bits of hope are evident.

►**Two Leaders Comment**—For example, two top executives of the industry made courageous public statements recently which deserve commendation.

American Airlines President Ralph Damon told the New York Society of Security Analysts that there is a good possibility the industry can emerge from red ink "in the near future," provided there is no drastic change in economic conditions, and that the airlines continue to maintain a high safety factor.

Rather than bemoaning the general drop in all national travel, Mr. Damon emphasized that the airlines are winning more customers from surface carriers. He said bus travel will decline 5 percent this year. Rail passengers will diminish 12 percent. Airline passengers will decrease only 3.5 percent.

In Kansas City, TWA Board Chairman Warren Lee Pierson reiterated his conviction, originally expressed on his return from Europe, that the airlines must stop blaming everyone else for their difficulties, and set to work cleaning their own house.

Earlier, when AVIATION WEEK made such comments about the industry in its editorials, some executives took offense.

These pungent, optimistic statements by men heading two transcontinental systems present a refreshing contrast to the calamity wailing we have heard for so long. Perhaps they mark the beginning of a new tack to impress the public that the airlines are making a game fight to serve more people more efficiently instead of belaboring the outworn and tiresome thesis that the industry is so poor it is rapidly disintegrating without more and always more government gravy.

It seems inevitable that those airline managements who continue to place all of the blame on others will not remain in control indefinitely. Bold ideas and fresh thinking are indispensable in working air transport out of its difficulties. This is as true for CAB. We hope and believe CAB is past the immature stage of thinking reflected not many weeks ago when it called top airline people together in emergency session, and then placed the item of free meals in high priority.

►**Pioneering Lower Fares**—We have already given prodigious space here commending both nonscheduled and scheduled carriers courageous enough to experiment with lower fares. Commercial aviation can never hope to be a prosperous, mass transportation medium if it offers only de luxe service. Movie stars are glamorous and may help an airline's illusion of grandeur, but they won't keep a line running.

It may be true that fewer Americans are traveling. But is that an excuse for sitting down and moping or pouting? A few airlines are striking out not only to capture a bigger share of the public that is already traveling. They are out to create new traffic that did not even exist before lower fares were offered.

Elsewhere in this issue Charles Adams, our Transport Editor, reports that experimental coach services launched by Pan American and Capital are winning enthusiastic public reception. Pan American has added a second coach plane in each direction between New York and Puerto Rico on Fridays, Saturdays and Sundays. And Capital runs extra coach planes frequently on its New York-Pittsburgh-Chicago run at a fare about $2.50 more than a railroad coach ticket. On Nov. 29 four DC-4s were operated on this service each way.

Special trans-Atlantic excursion fares are also bringing totally unexpected traffic already this winter, and spokesmen of International Air Transport Association expect a second class or coach fare schedule will be added next fall.

The amazing thing to us is that some other airlines profess to be flabbergasted by the volume of patronage forthcoming so quickly after these low priced services were started. Obviously, coach rates are not the sole answer to industry's prayers, and they will be most successful in longer hauls, as the transcontinental nonscheduled lines have shown. But it should be clear to any business man that higher fares will never increase passenger traffic. Empty seats pay no expenses, let alone producing any profit.

This industry has underestimated its own potential. It doesn't know its own strength. If it would get together and make it possible for the millions to fly as economically as to travel by train, launch a concerted and cooperative educational campaign plugging its service, and continue its efforts for economy, safety, reliability and regularity, it will be amazed at public response. The public's trek to airport open houses and experimental coach services are harbingers of a promising future.

►**Selling The Public**—Speaking of public response, the biggest airport open house of them all was held in Los Angeles, Sunday, Nov. 14. Nearly 150,000 people set a new high in the series of such events. American and a few other lines have sponsored to get the public acquainted with airplanes.

The five carriers operating at Municipal Airport set up displays and aircraft for inspection. American conducted "flightseeing flights" every 30 minutes and carried 750 revenue passengers or about half the total flown by the three lines which were offering this service. Western flew 264 persons. "We could have sold at least twice the number of tickets if we had had the space," Hicks Coney, American's western region public relations manager, said.

The most important fact is that 9 out of every 10 Los Angeles passengers was a first flighter. For experience shows that most persons are converted to air travel after their first flight. For too long, air transport has been concentrating its selling on regular air passengers instead of the millions who have never flown.

The sky is still dark, but signs like these point to a break in the overcast.

ROBERT H. WOOD

BLUE RIBBON

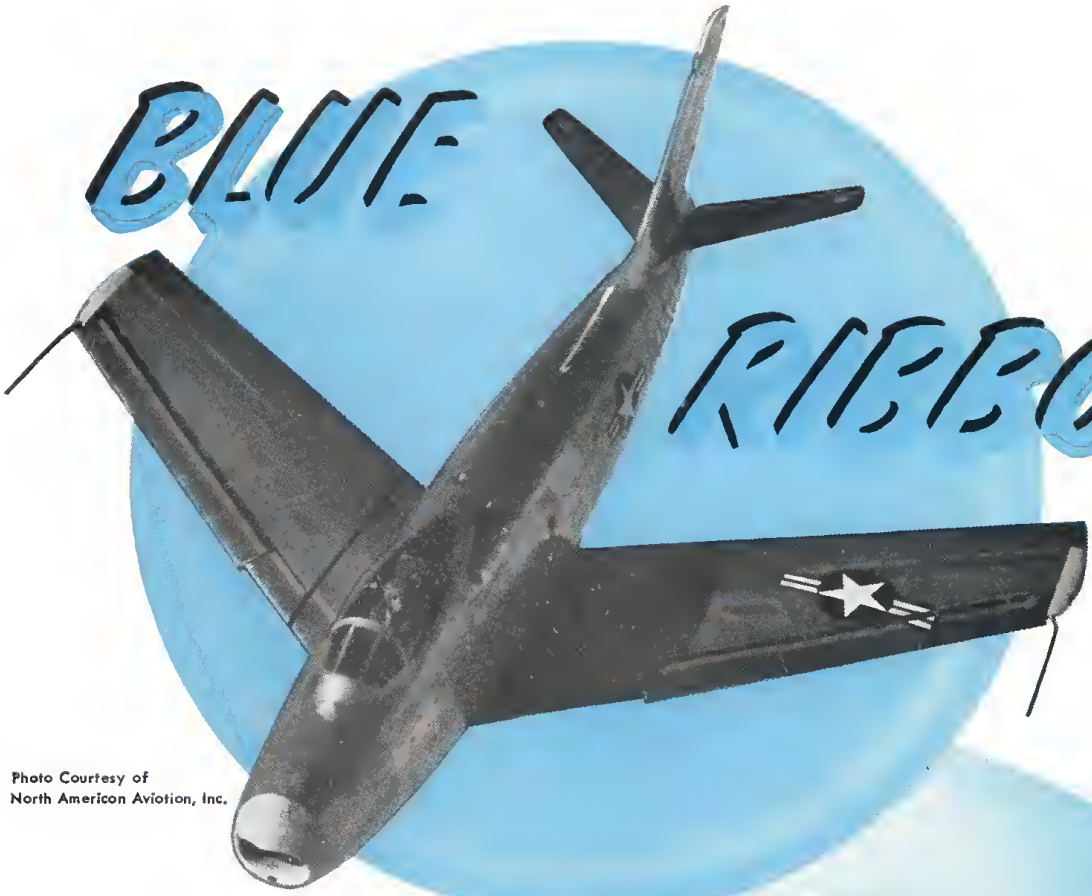

Photo Courtesy of
North American Aviation, Inc.

The North American F-86, powered by o General Electric TG-190 (USAF Type J47) turbo-jet engine, is the "blue ribban" winner af the new official world speed recard of 670.981 miles an hour.

Piloted by veteran ace Major Richord L. Jahnsan, the turbo-jet plane bettered its awn unofficial recard of 669.75 mph set ot the Natianal Air Races at Cleveland. The F-86 was completely armed and carried a full complement of ammunitian. The new recard was annaunced on Air Farce Day by General Hayt S. Vandenberg, Chief af Staff of the Air Farce.

The TG-190 pawer plant af the super-streamlined F-86, was *develaped* and *produced* by G-E's Aircraft Gas Turbine Divisians at Lynn, Mass. The farmer speed recard of 650.796 miles per haur was set by a Navy Douglas D-558 "Skystreak" propelled by the General Electric designed TG-180.

General Electric research and engineering works continuausly to imprave existing products and to devise new means to ossist its assaciates in the aviation industry. G-E leadership in the development ond praduction of engineered systems and precisian products for aircroft is available to you by contacting your nearest G-E office. *Apparatus Department, General Electric Campany, Schenectady, New Yark.*

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